METHODS OF TEACHING

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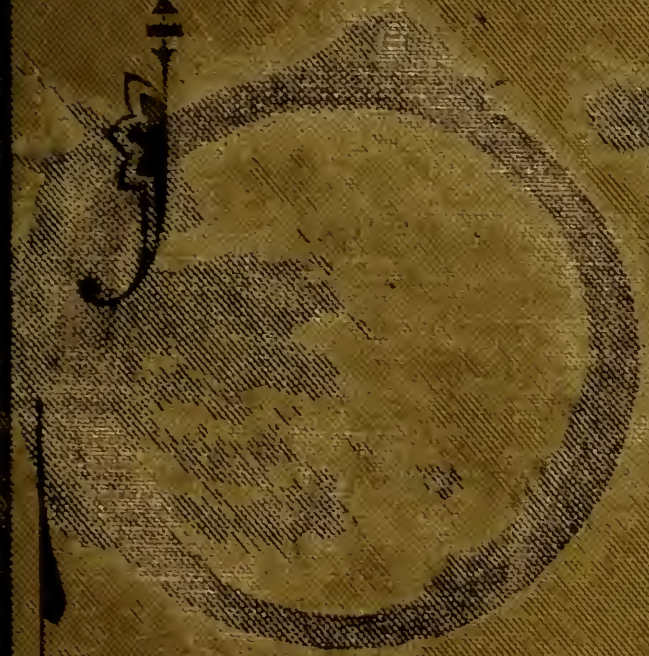

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METHODS OF TEACHING:

INCLUDING

THE NATURE, OBJECT, AND LAWS OF EDUCATION, METHODS OF INSTRUCTION, AND METHODS OF CULTURE.

BY

ALBERT N. RAUB, PH. D.,

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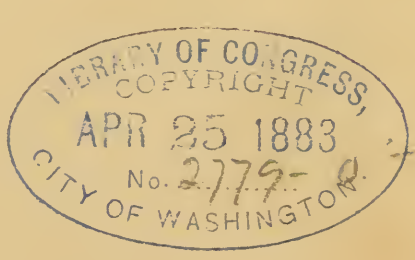

FIRESIDE PUBLISHING CO.,
PHILADELPHIA, PA.
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PREFACE.

THE aim of the author in preparing this work has been to write a book which would commend itself to all progressive teachers for its practical value. He has endeavored to present only such methods as have proved valuable in practice, and such as every young teacher will be safe in adopting. Where a method has seemed to him either unphilosophical or of little value in practice, the author has not failed to condemn it, however eminent the theorists who have been its advocates.

The book is designed not only as a textbook for the use of Normal Schools and Normal Classes, but also as a handbook for the use of students who are preparing to teach, but have not an opportunity of taking a course of professional instruction. It is designed also to afford help to those who are already engaged in teaching, and are desirous of improvement by professional reading.

While the author has followed a systematic arrangement which will make the work desirable as a classroom textbook, he has at the same time kept steadily in

view the wants of the earnest teacher seeking for practical methods in a condensed form. To such the suggestions appended to the discussions of the various topics will be of special value and importance.

The author believes in applying the crucial test of school-room work under its ordinary conditions to every educational theory, whether new or old, and proving its value or its worthlessness there rather than on the lecturer's platform or in a pedagogical treatise. He therefore hopes that the methods here advocated may be submitted to the actual test of the class-room, believing that if they are judiciously used the teacher who employs them will meet with success.

A. N. R.

State Normal School, Lock Haven, Pa.,
February 15, 1883.

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METHODS OF TEACHING.

PART I.

GENERAL NATURE OF EDUCATION.

CHAPTER I.

The Nature and Object of Education.

Teaching, in the modern acceptation of the term, embraces both *culture* and *instruction*. It includes not only educational training, but also the imparting of knowledge; the term is therefore synonymous with the word *education*. Formerly, the word "teaching" signified substantially the same as the word "instruction," and therefore included only the imparting of knowledge.

Education.—The term education is derived from the Latin *educo*, *educare*, to foster, to feed, to teach. Its primary signification, like that of the word "teaching," was more limited than its present meaning. By some writers the word "teaching" has been applied to the training of the intellectual nature alone, while the term "education" has been applied to the culture of man's moral nature.

It is claimed that education is both a science and an art. As a science it investigates, classifies, and formulates the laws which govern the physical and mental actions of mankind. As an art it applies such means and methods as impart the most profitable instruction in the manner best suited to give both mind and body the most valuable culture.

The process of education involves three elements—*Man*, or the object to be educated; *Knowledge*, or the means to be employed; and *Methods*, or the manner of imparting knowledge in such a way as to give the proper culture.

It will readily be seen that the science of education admits of study, and it will as readily be admitted that to be a successful teacher, in the broadest sense of the term, one must understand thoroughly the three elements which enter into the process of all true education.

Man consists of body and mind. The teacher must understand the nature of both of these. He should have a thorough knowledge of the physical system, the functions of the various parts, and the best means of preserving the bodily health. He should also know definitely the influence which a diseased or a healthy body exerts on the condition of one's mind, and also the proper means by which to promote physical health and physical training, so as to make the body not only healthful, but also strong and beautiful.

The teacher must understand the human mind. He must know the faculties of which it consists, the comparative order of development of those faculties, the proper knowledge to be imparted in order to secure the most profitable mental growth, and the method of im-

parting knowledge in such a manner as to secure the best results. It is no more necessary for the farmer to understand the nature of the soil he tills, the manner of growth of the plant he cultivates, and the laws which govern that growth, together with the means to be applied and the proper method of application in order to promote healthy growth, than it is for the teacher to understand thoroughly the human mind.

It is true that an ignorant farmer, without any knowledge of scientific husbandry, may manage to secure a crop, and, as he gains experience, increase the size of the crop. In a similar manner, the non-scientific teacher may find minds developing under his training, notwithstanding his blunders or ignorance; but neither the plant-growth nor the mind-growth is what it might have been under the judicious guidance of one who understood his work from the beginning. Skillful teaching, like skillful husbandry, may be gained by experience, but it must be at the expense of the mental growth of the children placed under the unskilled teacher's care. The school-room ought not to be a place where low-salaried teachers are placed to gain experience by continued experiment.

The Object of Education.

The chief object of education is development in the fullest sense of the term—intellectual, moral, and physical. That man is best educated whose whole being, body and mind, is most symmetrically and harmoniously developed, and whose powers, both physical and mental, have been strengthened and cultured in accordance with the laws of normal growth.

Education embraces *Culture* and *Instruction.* Man has certain powers both of body and of mind, each of which may receive systematic training designed to give it perfect development. These methods of training, whether of the physical or of the mental powers, give rise to what are known as *Methods of Culture.*

In the process of education knowledge is communicated. The mind craves knowledge as the physical system craves food. The physical organs digest and assimilate the food, and it is made to supply physical loss, give strength to the body, and develop the physical system. In a similar manner, knowledge is assimilated by the human mind, the mental powers systematize it, and it is made to aid healthy mental growth and development. The methods of imparting this knowledge from one mind to another give rise to what are known as *Methods of Instruction.*

Methods of culture and methods of instruction are in a measure distinct, and yet each implies the other. Culture is gained by knowledge as physical growth is gained by food. There can be no culture without knowledge, and that system of instruction is best which gives the most valuable culture. Instruction aims to impart knowledge, while the object of culture is to give growth and development. The latter is an end to be attained, while the former is a means by which to attain the desired end.

The art of *school management* has by many writers been considered one of the essentials of education. It seems, however, rather to be co-ordinate with *methods of culture* and *methods of instruction.* Indeed, the three are so intertwined that it is a matter of no little diffi-

culty to discuss any one of them without to some extent trenching upon the others.

The process of education may be subdivided, according to the powers to be dealt with, into *Physical*, *Intellectual*, and *Moral* education. To these may be added *Æsthetic* and *Religious* education.

Physical education has for its object the proper training, growth, and development of the human body in such a way as to promote strength, health, grace, and beauty.

Intellectual education has for its object the training, growth, and development of the intellectual powers of man. It aims to give strength and development to man's mind, as physical education does to his body.

Moral education has for its object the training and strengthening of man's moral nature. It considers the relations which exist between any individual and other human beings. It aims to cultivate the conscience, and subordinates the will to one's sense of right and duty.

Æsthetic education has for its object the culture of taste. It aims to train man's mind not only to perceive, but also to appreciate and love, the beautiful.

Religious education differs from moral education in this, that it considers man's relations to a Supreme Being, where moral education deals with man's relations with man alone.

Definition of Terms.

A **Teacher** is now understood to be one who teaches or educates. A teacher is no longer one who simply instructs, he also trains.

An **Instructor** (*in* and *struere*, to pile up) is properly one who imparts instruction.

An **Educator** (*educare*, to foster, to teach) is one who is conversant with education—one who promotes the cause of education, rather than one who educates.

Pedagogy (*pais, paidos*, a boy, and *agogos*, leading) is used by many writers as synonymous with education, including both the science and the art of teaching. It is a favorite term with German writers, though, it is said, they do not advocate the term "pedagogue."

Didactics (*didaskein*, to teach) is also used as a synonym for the word "education." In many normal schools and in some colleges the term has gained a foothold, from the fact that chairs or professorships of didactics have been established.

It may be said of all these terms that none is more full of meaning or more likely to be respected than the two words *Teacher* and *Teaching*, which have a humility and sterling worth all their own.

CHAPTER II.

Educational Laws.

As has been stated, the chief object of education is an harmonious development of all man's powers. This development is controlled by laws which govern the growth both of body and of mind. In some respects man does not differ from the lower animals, or even from the vegetable kingdom. Plant life and growth depend upon fixed natural laws, which the husbandman must understand in order to give the most profitable culture; and, similarly, both the physical and the mental growth of man are governed by laws or principles which dare not be ignored if we hope to secure the best development.

All systems of education must be based on these natural laws, and every one that enters upon the work of teaching should understand them as thoroughly as the physician is expected to understand the anatomy and physiology of the human body or the laws of hygiene. An eminent writer says: "Nothing is more absurd than the common notion of instruction, as if science were to be poured into the mind like water into a cistern that passively waits to receive all that comes." Sir William Hamilton says: "A liberal education is an education in which the individual is cultivated, not as an instrument toward some ulterior end, but as an end unto himself

alone; in other words, an education in which his absolute perfection as a man, and not merely his relative dexterity as a professional man, is the scope immediately in view."

GENERAL LAWS.

The following are among the most important of the general laws of education, together with the inferences:

Law I. The Human Mind Embraces a Number of Distinct Faculties.

The *Mind* is that which thinks, feels, and wills. These operations indicate three departments of mind, as follows: The thinking or knowing part, called the *Intellect;* the feeling or emotional part, known as the *Sensibilities;* and the part which puts forth volition, known as the *Will.*

A *Mental Faculty* is the mind's power of doing something or of putting forth some mental activity. The mind has as many faculties as there are distinct forms of this mental activity. Metaphysicians do not agree upon the exact number of mental faculties, some holding that attention and consciousness are distinct mental powers, while others maintain that these are only conditions which accompany all forms of mental activity.

The *Intellect* includes a number of faculties—*Perception, Memory, Imagination, Understanding,* and *Reason* or *Intuition.*

The *Understanding,* which is known also as the elaborative power of the mind and as the reasoning powers, embraces several distinct forms of mental activity, known as *Abstraction, Classification, Generalization, Judgment,* and *Reasoning.* The term *Conception* is by some writers

substituted for the terms "Classification" and "Generalization."

The *Sensibilities* include the emotions, the appetites, and the desires, which are also subdivided by some authors into animal and rational.

The *Will* is the executive power of the mind.

Each of these mental powers has its special work to perform, not only in acquiring knowledge, but also in the matter of securing proper culture and development.

Inference 1. *A proper scheme of education must provide for the training of all man's powers.*—This is evident from the fact that the development must be an harmonious development. A one-sided education is necessarily defective. Culture of intellect alone, without the corresponding culture of the moral nature, may make a man an intellectual giant, but lacking character he becomes all the more dangerous because of his intellectual strength. The fact, too, that God has endowed man with these various powers, and that each has its special use in aiding one to attain a symmetrical development, are strong proofs that educational plans must provide for the proper training of all the various powers.

Inference 2. *Such branches of knowledge must be taught as will give development to all man's powers.*—The wise teacher will adapt the knowledge he attempts to impart to the mental wants of the child. Studies, a knowledge of which may be gained through the senses, will prove well adapted to the training of perception; mathematics and grammar will be found suited to the culture and development of the understanding; and still others will be found suited to the culture of the memory, the imagination, and the other mental faculties.

Inference 3. *The methods of instruction must be such as to develop all the mental powers.*—Mechanical instruction or imitative teaching too often results in mere memory-culture. Pupils who are permitted to memorize text-book answers have the memory trained at the expense of the other mental powers, and rarely become successful or profound scholars. Those also who memorize problems and mathematical solutions and demonstrations, or who solve problems without thought and without explanation, violate the same principle of mental growth. No two branches can be taught in precisely the same manner. The intelligent teacher varies his methods, so as to develop harmoniously all the powers of the human mind.

Law II. The Faculties of the Mind Develop in a Fixed Order.

While it is true that all the mental powers are more or less active at all times, it is equally true that at the various periods of life some of these faculties are relatively stronger and more active than are the others. Psychologists agree that *Perception* is more active in infancy and early childhood than the other faculties. The first knowledge that a child gains comes to him through the senses; these furnish all knowledge acquired through the operation of the observing powers.

The *Memory*, or that power by which we retain and recall knowledge, is also developed at an early period of life, and closely connected with its operations are those of the *Imagination*, the power by which we form ideal creations. The development of these two follows closely

on that of Perception, and from this point onward the three are more or less active together.

The *Understanding*, or that power of the mind which takes the materials furnished by the other faculties and derives new products and new truths—that power which classifies, generalizes, judges, and reasons—is probably the next in the order of development.

Still later is developed the *Reason* or *Intuition*, the power which gives us thoughts and ideas not furnished by the senses or reasoned out by the understanding, such as our ideas of beauty, right and wrong, time, space, and cause.

Thus it will be found there is an order of mental development which characterizes every child. It may be more marked in some than in others, and different minds may develop with greater or less rapidity, but the truth remains that there is a relative order of development in the mind; and this dare not be ignored by the teacher.

Inference 1. *Studies must be adapted to the order of mental development.*—It would be absurd to require children to pursue the study of such branches first as require an exercise of the understanding, since this is among the last of the mental faculties to be developed. Naturally, the first studies should be such as appeal to the senses. Following these should be such studies as are suited to give memory-culture, then such as will train the imagination, and so on, making the studies correspond to the natural order of mental development.

Inference 2. *Methods of instruction must be adapted to the laws of mental growth.*—The first instruction must be adapted to the undeveloped character of the child's mind. Indeed, the earliest instruction must be largely informal,

such as is characteristic of the Kindergarten, where the child is placed amid such surroundings and under such conditions as will lead him to develop his own powers, the teacher acting mainly as a guide. The next step is such methods as will develop both memory and perception, and so forward, following the indicated order of mental growth.

Law III.—Self-activity is a Law of Mental Growth.

Sir William Hamilton says: "The primary principle of education is the determination of the pupil to self-activity." A plant grows and develops in accordance with an inherent principle or law. All that the husbandman can do is to hasten or retard that growth by surrounding the plant with conditions favorable or otherwise. The life-principle is there, and simply awaits the conditions which will prove most congenial and favorable to its development. The human mind also develops in accordance with laws inherent in its nature. If the conditions by which it is surrounded be unfavorable to its growth, its development may be retarded; but if these conditions, on the other hand, be favorable, the development may be marvelous. The mind of a child is not a mere passive receiver into which knowledge may be poured. True education is growth, development. It is only by the mind's inherent energy that it becomes strong.

Inference 1. *Studies must be such as will enable the child to acquire self-development.*—No child should be required to pursue the study of that which is beyond his capacity to master. Studies must be adapted to the mental ability of the learner. Much of the dissatisfaction some years ago with results in the teaching of such

branches as grammar arose from the fact that the science taught was beyond the comprehension of the learner. Children could not master the difficulties for themselves, and many teachers had no knowledge of the subject outside of the individual textbook which they had studied. The law of self-activity had been violated in both cases.

Inference 2. *Methods of instruction should be such as will train pupils to self-development.—Training to think* is the important part of all good teaching. It is what the child does for himself that gives him culture and strength. The wise teacher does not spend so much of his time in imparting knowledge as he does in guiding the learner's efforts to acquire knowledge for himself. A teacher can do no greater harm to a child than to furnish that child with answers and thoughts ready formed. Every child should do his own work, his own thinking, if he hopes to acquire either knowledge or mental growth.

It is only the unskilled and uneducated teacher that believes children are educated mainly by what they are told. That instruction or that discipline which aids the child most is that in which the teacher acts as a guide only, and permits the child to think and do for himself under judicious direction. All teachers should be alive to "the worthlessness of any process of elementary education which does not aim, above all things else, to train the minds of pupils to think, and to empower them to give fluent and accurate expression to thought in speech and writing."

Law IV.—The Mind is both Acquisitive and Productive. We receive knowledge largely through the senses.

Children very early in life observe and gain knowledge constantly through this channel. We acquire knowledge also by reading and by listening to the words of others.

The mind not only receives knowledge, it also creates. It is the special work of the understanding to create new products and bring new results from the materials already in the mind. It is the work of the imagination to create ideal pictures. The mind is therefore not only acquisitive, but also creative.

Inference 1. *Studies must be of such a character as to afford knowledge and furnish material for thought.*—It is not enough that we simply receive; knowledge must be of such a character as to permit us to originate thought. One is essential to the other. Both acquisition and production are necessary to give the mind proper culture. The knowledge gained by the acquisitive powers must be such as will furnish material for the productive; thus both may become strengthened and developed.

Inference 2. *Methods of instruction must be adapted both to furnish knowledge and to arouse thought.*—Much of the knowledge imparted in the ordinary course of instruction is designed to give the student a fund of information. The method of imparting this knowledge, however, must be such also as will create interest, that it may be acquired under the most favorable circumstances. The method of imparting knowledge must be such also as will serve to arouse thought on the part of the pupil. Where it is possible, the pupil should be encouraged to originate new thoughts, give original solutions, and, in general, exercise the productive power of the mind.

Law V. Human Beings are Created with Different Tastes and Talents.

All minds have the same general powers, but these powers are not equally strong or equally susceptible of development in each individual. Children's tastes differ. So also do their capacities for acquiring certain kinds of knowledge. One may be specially talented in mathematics, but deficient in language, while another's taste is for language or natural science rather than mathematics. In either case the pupil will acquire much the more readily that knowledge which is in accordance with his natural taste.

Inference 1. *Knowledge must be adapted to the individual taste.*—While it is wise in elementary schools to give general instruction at first, it is also wise, where possible, to adapt the branches taught to the individual capacity of the pupils. If one is specially fitted to become a painter or an artist, every opportunity should be afforded not only to gratify the special taste, but also to give culture to the natural talent. Technical schools must of course do much of this work—polytechnic schools for engineers, medical colleges for physicians, theological schools for clergymen, and so on. In these the special knowledge can be adapted to the individual preferences.

Inference 2. *Methods of teaching should vary according to the individual capacity of pupils.*—This is true not only as concerns the individual taste of pupils, but also as concerns their individual talent. The bright pupil needs but little assistance, while his neighbor, who thinks more slowly, may need considerable encouragement, and occasionally actual assistance, to enable him to understand and comprehend. The difference of individual talent

to some extent characterizes also the two sexes, and the methods of instruction, even in the same class, ought to vary on this account.

Law VI. The Human Mind is Finite.

The powers of mind are limited. We can reason to a certain extent, but there our power ends. Every faculty of man, like every one of his physical powers, has limits beyond which it is impossible to operate. We cannot comprehend the Infinite.

Inference. *All methods of teaching must end in that which is finite.*—It is folly to attempt to reach the infinite. We may go beyond the finite, reaching forth everywhere beyond the unknown, but many of our conclusions will prove our work to be mere speculation.

CHAPTER III.

Forms of Instruction.

Instruction consists in imparting knowledge to another. Knowledge may be conveyed in different ways, and these give rise to different forms of instruction. The most important forms of instruction are the following:

1. **Oral Instruction.**—This consists in the teacher's talking with his pupils and conveying orally most or all of the knowledge he imparts. It does away with the use of the textbook. The teacher takes the place of the textbook, and furnishes all the facts and principles that the textbook is supposed to give. The chief value of this method of instruction is found in its application to primary schools, where object-lessons form the basis of instruction. Even here, however, it is liable to be abused and to lead pupils into careless and idle habits.

2. **Concrete and Abstract Instruction.**—*Concrete Instruction* is that which makes use of objects and illustrations for the purpose of imparting knowledge. All work in the nature of object-lessons may be regarded as concrete, also such methods as employ diagrams, pictures, apparatus, or illustrations of any kind.

Concrete instruction is valuable in all primary teaching

of any branch. Indeed, all primary teaching is best accomplished by the concrete method, where every child can be made to understand by the use of such illustrations or apparatus as he is fully able to comprehend.

Abstract Instruction does away with all illustration. The mere repetition of rules in grammar, the reciting of tables in arithmetic, counting and performing other arithmetical work by rote, and without the use of practical illustration or business application, are examples of abstract teaching.

3. Synthetic and Analytic Instruction.—*Synthetic Instruction* is that which begins with parts and proceeds to wholes. In geography it begins with the home or the school-grounds, and proceeds from that to the township, county, State, etc. In grammar, synthetic instruction begins with words and forms sentences, and from these discourse.

Analytic Instruction is the opposite of synthetic. Analytic instruction proceeds from the general to the particular, from wholes to parts. In geography, analytic instruction teaches the globe first as a whole, then the divisions, then the subdivisions, etc. In grammar, analytic instruction begins with the sentence and proceeds to the divisions and their modifiers, showing the uses of the respective parts.

4. Inductive and Deductive Teaching.—*Inductive Teaching* is somewhat of the nature of synthetic teaching. It proceeds from the particulars to the general. It begins with examples and processes, and ends in principles and rules. In arithmetic, by inductive teaching, the pupil is

led to form his own rules from a clear understanding of the various processes. The same is true in other branches: the examples and processes come first, and the rule or principle last. By the inductive process the order is, first the idea, then the name, and lastly the definition.

Deductive Teaching begins with principles or rules, and passes to the demonstration and application of them. It proceeds from the general to the particulars. Its order is the reverse of the inductive method. In geometry, it begins with the proposition and proceeds to the demonstration. In philosophy, it states the general law, and then proves it by experiment and illustration. In arithmetic, it lays down the rule, and then shows the practical application.

CHAPTER IV.

Important Educational Principles.

The following important principles should be kept in mind by the teacher:

1. **Instruction and Culture are Mutually Dependent.**—Any attempts at educating in which instruction is imparted without giving culture are worse than useless. Culture is, indeed, the chief object of education, and therefore instruction should aim not simply nor chiefly at imparting knowledge, but rather at so cultivating the mind as to give it a healthful, symmetrical development. Any attempts at culture must result also in imparting to the mind of the learner a vast quantity of useful knowledge. The two, therefore, are mutually dependent.

2. **Culture is more Valuable than Knowledge.**—The undisciplined or uncultured mind, however valuable the facts and knowledge it may have stored, has but little power unless that knowledge be at command. Bacon says: "Knowledge is power;" it were better had he said, Culture is power. Culture even gives one the power to acquire knowledge. It enables one to originate; it gives one new ideas. Culture prepares us to win the battles of life. Knowledge gives us the giant's

strength, but culture gives us the power and the skill to use that strength effectively.

The teacher, while imparting knowledge, should always keep in view the culture of the child's various faculties, and under no circumstances should he permit his liking for any department of knowledge to lead him to forget that it is his mission to develop the child-mind, rather than pour into it a mass of disintegrated and disconnected facts called knowledge. The teacher should know the value of each study, its relation to the mental faculties, and how best to teach it so as to give each of these faculties its due share of culture.

3. Exercise is Necessary to Culture.—Strength of both body and mind comes from exercise. The muscles unused become weak and flabby; the senses unused become obtuse; the memory without exercise becomes unreliable; and thus with the other mental powers, each grows weaker the less the exercise to which it is subjected. On the other hand, the more one's mental and physical powers are exercised judiciously, the stronger and the more reliable they become.

Studies must not, however, be of such a nature as to stimulate too greatly, otherwise some of the mental powers may be abnormally developed, or be developed at the expense of others quite as important. The various branches of knowledge are well fitted to give culture to all the mental powers, and it is the work of the judicious teacher to provide for the symmetrical culture of these powers.

4. The Order of Instruction must Correspond to the Or-

der of Growth.—By some writers the school-time of life has been divided into four periods, as follows:

1. *Infancy*, or the time from *birth* to the age of *five*.

2. *Childhood*, or the time from the age of *five* to the age of *ten*;

3. *Youth*, or the time from the age of *ten* to the age of *sixteen*;

4. *Manhood*, or the time from the age of *sixteen* to the age of *twenty-one*.

Dr. Hill divides this time into five periods, as follows:

1. The *first*, or *sub-primary school*, from the age of *five* to the age of *eight*;

2. The *second*, or *primary school*, from the age of *eight* to the age of *eleven*;

3. The *third*, or *grammar school*, from the age of *eleven* to the age of *fourteen*;

4. The *fourth*, or *high school*, from the age of *fourteen* to the age of *seventeen*;

5. The *fifth*, or *college period*, from the age of *seventeen* to the age of *twenty-one*.

The foregoing division is not only practical, but also logical where the child is placed under systematic instruction the greater part of the year. As the length of the school-term varies, however, the author prefers the following division into three periods:

First Period.—This includes the first ten years of the child's life. During a great part of this period the child depends, to a great extent, on its senses in acquiring knowledge. The perceptive powers develop rapidly, the attention of the child is engaged with surrounding objects constantly, and the elements of knowledge are

gathered from the surrounding world. It is during this period that the child learns to walk, run, and perform other physical feats. During this period also it learns language rapidly, but almost wholly by imitation. Habits of speech formed at this time will in most cases be habits for life; it is therefore all-important that the language which it acquires and incorporates as a part of its own vocabulary be both correct and elegant.

The child during this first period of life is constantly gathering facts from the surrounding world. It investigates things, their properties and uses, and seeks to know their names. It is all this while laying the foundation for future knowledge of a more scientific character, and the efforts of those who have the guidance of the child should aim to aid Nature, for she is the chief teacher. She supplies the materials and furnishes the occasion for the mental exercise, and the child learns by its own efforts.

The teacher's methods must be such as harmonize with Nature. She lays down for the learner no rules, no general principles, no laws. She simply places the objects before the child and stimulates him to inquiry, and he learns for himself. She spurs the child to action, and even permits him to find out his own blunders. Does the child want to know whether an object is hard or soft, hot or cold, heavy or light, sweet or sour, she does not explain, but lets him make the test and gain the knowledge for himself. She tells the child little, but allows him to do his own work, and gives him no help where it is possible for him to find out for himself. Let the wise teacher take the hint which Nature gives in this quiet teaching.

In *Mathematics* let the work be in connection with objects. The teaching here should be concrete. Beginning with the counting of objects, the child may be made to understand the processes embraced in the fundamental rules, Fractions both common and decimal, and gain some knowledge of Denominate Numbers, particularly if the tables be illustrated by means of actual weights and measures. The child during this period may also be made to distinguish the chief geometrical forms and name the different elements of form.

In *Language* the child should first be taught to talk, and care should be taken that the forms of speech which it uses are correct, that the use of good language may become a habit of its life. Beginning with the age of six or seven, a systematic course of instruction in language-lessons may be given to the child, including the composition of sentences, the copying of reading-lessons, the use of capital letters, the use of the chief punctuation-marks, the changing of sentences from one form to another, the reproduction of stories, descriptions, etc. The child may also learn during this period much of the spelling and pronunciation of its mother-tongue.

In the department of *Physical Science* the child's knowledge consists largely of an accumulation of facts which are the results of its own observation. Many of the questions which he will ask would puzzle a philosopher to answer. It is the work of the teacher to direct the child's efforts in such a way as to make his knowledge useful. The child may be taught much with reference to leaves, flowers, and trees; also about wild and domestic animals, and their habits; also the different kinds of minerals, together with their uses and comparative value. He may also be

taught some of the more simple facts of natural philosophy, together with the causes of the most familiar phenomena.

In *Geography* he may be taught to distinguish the different divisions of land and water, the locations of the most important countries on the map, the directions of the compass, the direction of the different localities from his own home or from the school-house.

In *History* the knowledge he gains must be largely of a biographical nature. It ought to consist mainly of stories read or related by the teacher.

In the *Arts* the child may be taught to sing at a very early age. But little of the science of music, however, should be attempted. Some attention may be given during this period also to writing and drawing.

Second Period.—This period extends from the age of ten to about the age of fifteen. During this period Perception is still active, but Memory is now also rapidly developed. The child now not only observes more closely, but, as his memory grows stronger, he is better able to glean knowledge from the printed page, and retain it. The accumulation of facts should continue to be an important part of the learner's work, but his mind should be trained also to habits of accurate recollection. It is not enough that the mind be able to retain the knowledge gained; it must also be able to reproduce that knowledge accurately. The reasoning powers also begin to develop rapidly during this period, and the course of study, as well as the methods of training and instruction, must be made to conform to the natural development of the mind.

In *Mathematics* the child during this period should

have a thorough drill in both oral and written methods of arithmetic. He ought also to complete the study of algebra and the elements of geometry.

In *Language* he should give much attention to reading, spelling, and composition. During this period he should begin the study of practical grammar, and be trained to make the correct application of its principles in his own speech and writing. He should also be taught the use of the dictionary, the origin and derivation of words, and the use of synonyms. His taste for literature may be cultivated to some extent by committing to memory declamations and choice extracts of both prose and poetry. He should also be trained to habits of reading, and, if it is desirable to acquaint him with other languages than his own, this is the period of life in which the work should be begun.

In the *Physical Sciences* he should be made acquainted with the elementary truths and principles of physical geography, physiology, botany, natural philosophy, and, to some extent, chemistry and geology, though these latter should not yet be pursued as formal studies. In all these the teacher should illustrate largely, permitting the pupils also to make experiments for themselves, and thus make the knowledge gained all the more impressive.

In *Geography* the pupil should during this period complete the ordinary textbook and have a fair knowledge of political, descriptive, and mathematical geography.

In *History* he ought to complete the elementary history of his own country, and read considerably on general biography, travels, and explorations. He ought to gain some knowledge of the prominent events of the

world's history, as well as a knowledge of the world's most noted characters, such as Cæsar, Cromwell, Demosthenes, Shakespeare, Frederick the Great, Washington, and Columbus.

In the *Arts* he should during this period learn to sing by note, gain a knowledge of the science of music, be able to write legibly, and draw with correctness and ease. He may also gain some skill in performing on one or more musical instruments.

The Third Period.—This period extends from the age of fifteen to the age of manhood, twenty-one. All the powers of the mind are now active, and the learner is prepared to take up in their regular order the usual studies of the technical school course.

In *Mathematics* the course may embrace the higher mathematics, both pure and applied.

In *Language* the course should embrace higher grammar, rhetoric, the critical study of classics, general literature, philology, etc. The student should also be directed in a course of general reading, such as will give him broad culture and a thorough knowledge of the style and modes of thought of the classical writers of both prose and poetry. He should also have much practice in composition and speaking.

In the *Physical Sciences* he should pursue a full course, including mechanics, optics, acoustics, electricity, astronomy, chemistry, anatomy, physiology, zoology, geology, and mineralogy.

In *History* the course should embrace not only a history of one's own country, but a complete history of the world in general, and a detailed history of the most important countries—England, Ireland, France, Germany,

Spain, Greece, Rome, and others; to which may be added a course in the philosophy of history.

The course in the *Arts* may be continued, and be made to embrace the higher departments of music, painting, and drawing, including architecture and landscape-gardening.

To these courses may be added a course in mental and moral philosophy, logic, political economy, æsthetics, international law, the evidences of natural and revealed religion, and rational psychology.

5. **The Order of Instruction must be from the Concrete to the Abstract.**—The child first learns to recognize objects, and afterward their qualities, and, by comparison, their relations. It begins with the concrete. The ideas of qualities are associated with the objects in which it first perceives the quality, but subsequently it learns to distinguish the quality independent of the object with which it is associated, and thus gains a notion of abstract quality. Thus, at first it simply associates the idea of hardness with marble or stone or iron, but after a time it has a conception of the quality hardness independent of any particular object, and thus reaches an abstract notion or idea.

This natural method of thought indicates that the teacher should make his methods conform to the natural mode of mental operation. His first teaching should therefore be in connection with objects or concrete examples, and the teacher should be very cautious not to pass too rapidly from the concrete to the abstract. The character of the individual minds and their comparative order of development must also be closely watched in

this respect, for some grasp an abstract notion at a much earlier time of life than do many others.

6. **All Primary Instruction must Proceed from the Known to the Unknown.**—Things which are unknown can be illustrated and explained only by that which is well known. The teacher, therefore, should begin to teach just where the learner's knowledge ends, or rather start from that which the learner understands well, and proceed to the kindred fact to be learned. A child should be taught the relation of the new fact or truth to be learned to that which he already knows. What the child already knows should be the foundation on which to place the next truth or fact as an addition to the structure to be erected.

This proposition by no means argues that a child should never learn a truth without first understanding it. There are statements which he must take on faith, and await the future explanation. It is sometimes necessary to teach a principle whose relations and whose explanation the child is not yet prepared to understand.

7. **Instruction should First be Inductive, then Deductive.**—The child's knowledge begins with its observation of individuals and of individual facts. From individuals it passes by the inductive process to groups, then to qualities, and finally to general laws and principles. This is the natural order, and it indicates to the teacher the order to be pursued in the method of instruction. In arithmetic the mechanical process of solution must precede the rule. In geography the individual facts must

be taught before the laws and causes. In grammar the forms of speech should be taught before the rules which govern these forms; and thus throughout, in primary instruction, the particular should precede the general. Facts should precede principles.

As the mind develops, the two processes of instruction may be combined to some extent, until finally we reach a point where it is proper to pursue the deductive method almost wholly, as in the higher departments of grammar, where the rule or principle is stated and the application made to current forms of speech. The deductive method is appropriate also to the teaching of natural philosophy, higher mathematics, and in general to all advanced instruction.

8. **Ideas should be Taught before Words.**—This is the natural order in the acquisition of knowledge. The child, in examining an object, first observes, and then inquires, What is it? A knowledge of objects should precede a knowledge of names, just as our thoughts precede the sentences by which we express them. Ideas and thoughts differ. An *idea* is properly a notion of any thing, quality, action, etc., and is usually represented by a single word, as *boy, tall, sings.* A *thought* is a combination of ideas. It is usually expressed by a sentence, as "The tall boy sings," "Chalk is brittle." The natural order is, first the idea, then the name—first the thought, then the sentence or definition. This order of mental acquisition must be observed in all our teaching, particularly in all primary teaching.

9. **Observation is the Source of All Knowledge.**—All

knowledge of the outward world is conveyed to us through the senses, and this forms the basis of all our knowledge. It is specially important, therefore, that the senses receive careful training. This result may be secured by giving a systematic course of object-teaching. It is particularly important that sight and hearing receive systematic culture, as these two senses enter most largely into the intellectual processes. Intelligence and acuteness of these senses are important elements in the work of education.

10. **The Age and Capacity of the Pupil should Modify the Methods of Teaching.**—Such methods should be pursued in early life as will tend to give culture, particularly to the perceptive power and the memory, while methods requiring an exercise of the understanding or the reason should be reserved for advanced instruction at a later period of life. Many errors might be indicated in this respect in the various schools of the land.

Not only age, but also the capacity of the pupil, should modify both studies and methods. The teacher should so present subjects to be taught that the parts most readily understood may first be grasped by the child, and those more difficult be reserved for subsequent presentation. It is the work of the teacher to show pupils how to study, and indicate the order in which knowledge is most readily and most profitably acquired.

PART II.

METHODS OF INSTRUCTION.

OBJECT-LESSONS.

I. The Nature and Design of Object-Lessons.

Object-Lessons are lessons given on objects with the purpose of developing the mental faculties of children and cultivating habits of ready and accurate observation. They are also designed to impart elementary instruction in the facts and principles of the different sciences.

Lessons on objects given by the teacher for the mere purpose of conveying instruction or valuable information to the minds of the children, but without being adapted to the order of mental development, and without any systematic arrangement, are not object-lessons in the true sense, however valuable the knowledge presented by them.

A system of object-lessons should be graded and adapted to the natural development of the child-mind. It also should begin with the simpler facts and proceed gradually to the more abstruse and complex. The capacity of children at the various stages of mind-growth must be a governing principle here as in all other instruction.

The excellent suggestions given below are made by Superintendent N. A. Calkins of New York City in his admirable work on *Primary Object-Lessons*, where he divides the stages of object-teaching as follows:

"**First Stage.** During this period the pupil may be required to *distinguish objects by their names, to observe and name the principal parts, to describe their form, color, and uses.*

"**Second Stage.** During this period, which may commence in the second year of school-life, the lessons should embrace the *form, color, size, material, qualities,* and *uses* of objects, and answers to the simple inquiry, *Where obtained?* or, *By whom made?*

"**Third Stage.** During this period, which should commence in the third year of school-life, the lessons may include a more complete analysis of the several properties of objects, and attention to the adaptation of their prominent qualities to the purposes for which these objects are commonly used."

2. The History of Object-Teaching.

Object-teaching is one of the chief principles on which Pestalozzi's system is based. Indeed, it is usually regarded as the chief and most distinctive principle of that celebrated teacher's code. He held that the observing powers should be trained to perceive by examining real objects, and that it is the office of books to supplement the knowledge gained by personal experience. To him is usually given the credit of having originated this system of instruction, but improperly so. It is true that Pestalozzi made it a fundamental principle of all his teaching, and employed it at the schools of Burgdorf and Yverdon,

but Locke, Commenius, and others advocated the same system of instruction in advance of Pestalozzi. The system has been followed by the best teachers ever since teaching began, for all illustrations by objects is in a sense object-teaching, and all good teachers have resorted to this sort of illustration, though not all have done so in a systematic way.

3. The Advantages of Object-Lessons.

Object-lessons, conducted systematically, are of great value, both in conveying elementary instruction and in giving proper mental development. Their chief advantages are the following:

1. *Object-Lessons cultivate Attention.*—Knowledge presented by means of objects is put before the pupils in the most interesting manner. The illustration being such as they can comprehend, their thoughts are centred on the object, and the mind, instead of wandering from one point to another, is attentive to the lesson taught at the time. The earnest teacher who presents interesting facts relative to the object which forms the basis of the lesson cannot fail to give the attention of his pupils most valuable culture.

2. *Object-Lessons give Culture to the Power of Perception.*—This will be plain from the very nature of object-lessons. The child observes in order that he may distinguish, describe, and gain information. His mind is attentively directed to similarities and differences in the qualities of the objects which he examines. He becomes more and more interested as he gains more and more information, but all this time his power of Perception is receiving culture and becoming more fully developed.

His observation leads him to distinguish points of resemblance or difference which pass unnoticed by those who do not have the advantage of a systematic course of this kind of culture.

3. *Object-Lessons give Culture to the Memory*—Every faculty of mind is cultured by exercise; the knowledge, therefore, communicated in a series of lessons on objects, in order to be recalled and be of use in the future, must be received by the memory, and be retained there until the occasion arises which demands its use, when it is recollected or recalled. This effort at retaining the knowledge imparted is of course a valuable aid in memory-culture.

4. *Object-Lessons give Culture to the Imagination.*—The pictures of objects retained in the mind are recalled by the memory. These may in turn be remodeled and be presented to the mind in ideal forms, and thus give culture to the Imagination. The child whose perception has given him the idea of a house proceeds at once to construct one of sticks, paper, or other convenient material. He is not satisfied to retain the knowledge as it comes to him, but forms ideal pictures, and attempts to illustrate them with such material as he may have at hand.

5. *Object-Lessons give Culture to the Judgment.*—By a true system of object-lessons the child uses all his senses; he not only looks at an object, but he also puts his hand on it and judges its temperature, he lifts it and determines its weight, he carries it to his nose and ascertains its odor, he presses it and learns its density, he applies his tongue to find whether or not it has any taste, he raps on it with his knuckles to hear whether it gives forth any sound, and if so, what kind; and all this time he makes comparisons and judges of its qualities as compared with those

of other objects or with some definite standard, thus giving exercise and culture to the Judgment.

6. *Object-Lessons give Culture in Language.*—As children gain new ideas and thoughts they require new words to express them. The careful teacher is able to give much incidental instruction in the composition and structure of sentences as he gives the object-lesson. Children also learn to express themselves more fluently and more correctly as their power of perception becomes more accurate and they more readily distinguish differences and resemblances.

7. *Object-Lessons enable the Teacher to Present Knowledge in a Concrete Form.*—Having the object for illustration, the pupil more readily understands and comprehends the knowledge imparted. Knowledge is thus presented in a concrete form, and the child is thus methodically made to learn facts, phenomena, words, etc. in a form most interesting to the learner.

8. *Object-Lessons afford Opportunities for Imparting General Information.*—The teacher need not confine himself to a rigid routine in giving a course of object-lessons. Many incidental facts may be taught, many incidental questions may be judiciously answered, much curiosity may be aroused and gratified; and all this will afford the teacher an excellent opportunity for imparting valuable information in a way which will make it impressive and readily remembered.

9. *Object-Lessons train Pupils to Think.*—Training to think is the most valuable part of education. Object-lessons, in which the child is permitted to make inquiries of the teacher, examine closely and critically the qualities of the object which is the topic of the lesson, and have

his curiosity gratified, are well calculated to develop thought in the mind of the child, and in this way are especially valuable as an incentive.

10. *Object-Lessons make Thought Systematic.*—Pupils are not only trained to think, but they think systematically. When they look at an object to discover its different parts, they examine closely. They notice every quality and every action. They ascertain in what it is similar to other objects which they have examined, and in what respect it differs. Thought becomes a habit. Attention is undivided, and what the pupil learns he knows, because he fixes it in his mind in a systematic way.

11. *Object-Lessons create Interest in Study.*—The child that becomes interested in his studies becomes interested in the school, and the battle is half won. The teacher who can convey knowledge which will attract his pupils to him need have little fear of truancy. Nothing is better designed to make the school attractive and interesting than a series of lessons on objects, in which the pupil can be made to love knowledge for its own sake, while he does not appreciate the necessity of acquiring knowledge as a means of culture.

12. *Object-Lessons arouse Interest in the Community.*—The teacher who can create interest in his school will be successful also in awaking an interest in school-matters in the community. The means of creating a spirit of inquiry in the community by systematic object-lessons in the school should not be overlooked. The writer when but a mere boy set a whole neighborhood to discussing by asking in school while giving an object-lesson the simple question, "Why is it that when a single

stalk of corn grows in a garden the ears are very rarely perfect?" Every one in that community—for it was a farming region—had noticed the fact, but few could give the reason. The interest became still greater when a second question was added, as follows: "Why does every ear of corn have an even number of rows of grains?" No better plan can be devised to arouse an interest on the part of patrons than that of creating a spirit of inquiry, first on the part of the pupils, and through them on the part of the parents.

Many other reasons might be given why object-lessons are valuable, showing that they afford important elementary knowledge; that the knowledge imparted may be greatly varied; that school-life may, by means of object-lessons, be made more pleasant; that they create a desire for knowledge; that this is the natural method of imparting knowledge to beginners, etc.; but these need only be mentioned.

4. The Preparation Needed for Object-Lessons.

The Material.—As has been said, in order that object-lessons may be valuable, and that the time employed may not be wasted by unsystematic effort, all lessons on objects should be systematic, well graded, and adapted to the capacity of the learner.

Every school should be well provided with the necessary material to make the work most effective. There should be cabinets of leaves, grains, grasses, minerals, metals, coins, specimens of wood, insects, etc. There should also be charts of colors, geometrical forms, plants, leaves, and illustrations of natural history in general. To these should be added sets of mathematical forms—

cubes, cones, cylinders, spheres, spheroids, and the like. There should also be a quantity of apparatus with which to perform simple and inexpensive experiments. Should the school-officers fail to supply these, they can be secured by the plans suggested in the author's work on *School Management.*

The Teacher's Preparation.—The teacher should of course see that all this material is at hand when wanted, and that the apparatus is in proper condition to be used, in order that no failures may occur or time be wasted. He must also be thoroughly prepared on the subject which he attempts to teach. He should have at command all the knowledge necessary to be communicated. In order to secure this result he should consult cyclopædias, textbooks, and the people by whom he is surrounded. He may gain much information by visiting mechanics, farmers, merchants, and others in the neighborhood.

He should also prepare himself as to the method he desires to pursue in giving the lesson, so as to arouse the greatest interest and promote the ends of true culture. He should have an outline, and adhere rigidly to it, except as to the matter of conveying incidental knowledge.

The Pupil's Preparation.—The subject of the lesson should in general be assigned beforehand, in order that pupils may think and observe before the recitation is called. This will give training to the child's observing powers and make the lesson all the more valuable. In the advanced stages of instruction the child should not only observe; he should also read on the subject, and glean what knowledge he can in this way. He should

also be encouraged to make inquiries of his associates at home. This will arouse interest among the patrons, as has been heretofore suggested, and in the end prove beneficial to both parent and child.

5. Methods of Object-Lessons.

The proper order in methods of giving object-lessons is the following:

1. **The Children should be Permitted to tell All they Know.**—The object should be placed where all the members of the class can see it, and then by a series of questions previously arranged the teacher should give each member of the class a chance to express himself and tell what he knows. This will make the lesson of interest to every one; all will prepare themselves, and habits of thinking will be encouraged. It will also encourage the children to speak their actual thoughts, and speak them naturally, rather than memorize the words of a textbook and repeat them listlessly.

2. **The Pupils should be Led to Find Out what they can for Themselves.**—The pupil, after having exhausted his stock of knowledge, should be led to discover for himself by a series of judicious questions prepared by the teacher.

Herbert Spencer says: "To pursue the true course is simply to guide the intellect to its appropriate food, and to habituate the mind from the beginning to that practice of self-help which it must ultimately follow. Children should be led to make their own investigations and to draw their own inferences. They should be told as little as possible, and induced to discover as much as possible. Humanity has progressed solely by self-in-

struction, and that to achieve the best results each mind must progress somewhat after the same fashion is continually proved by the marked success of self-made men."

It is the business of the teacher to excite the curiosity and create the appetite for knowledge. It is his duty also to show the child how this appetite may be gratified, but it is not his duty to satisfy it. The child grows strong by what it conquers. The less the teacher does for it and the more it does for itself, the wiser the method of culture.

3. **The Teacher should Communicate such Knowledge as the Child cannot Gain by its Own Efforts.**—This is the last step to be taken in the method of imparting knowledge by object-lessons. After the pupil has told all he can, and the teacher has led him to discover for himself everything that is in the child's power to discover, it then becomes the duty of the teacher to impart such other knowledge as he may possess, and thus add to the interest and importance of the lesson. The teacher has it in his power to do almost unlimited good by imparting not only knowledge connected directly with the lesson, but such also as may have only an incidental bearing.

To some extent this order of method may be ignored where the interest is very great, or where the fact to be communicated by the teacher is so important or so interesting as to make it wise to interfere with the regular method by stating the fact when it will be likely to make the most lasting impression, or where it will illustrate most pointedly a truth or a principle of importance.

6. Preliminary Instruction.

Previous to any definite course of instruction by object-lessons children should have some training of the senses.

The sense of *sight* should be so cultivated as to enable the child to distinguish the shapes of objects, also their size, color, etc. The matter of rapid observation also is important. Many exercises may be given to develop the quick-sightedness of the child. A child may be made to look at the interior of a room for a minute and then state what it has seen. An excellent exercise is that of having the child describe what it saw during a walk of ten minutes. Other plans equally valuable may be devised.

The sense of *hearing* may be developed by teaching the child to distinguish objects by sound, by discriminating between high and low, loud and soft, sounds; also to locate objects and to judge distance by sound. In a short time it will learn to distinguish persons by their footsteps and friends by their voices; it will also learn to distinguish the bark of different dogs, the songs of birds, and even the lowing of different cows in a herd. All these sounds may be turned to practical advantage in the training of hearing.

The sense of *taste* may be cultivated by permitting the child to distinguish first between those objects whose taste is most in contrast, as bitter and sweet, sweet and sour, etc., and then by testing the varying degrees of sweetness, bitterness, and sourness.

The sense of *smell* may first be trained by placing before the child objects whose odors are strong, being careful to contrast those which are agreeable with those which are disagreeable as far as possible, as onions and

cologne-water, garlic and cinnamon. The child may also be taught to distinguish the various kinds of flowers by smell, as roses, lilies, pinks, and geraniums, and then the varieties of these; so also with fruits, plants, spices, and vegetables.

The sense of *touch* may also be greatly cultivated and developed by proper exercise. The child should be taught early to distinguish rough and smooth, hard and soft, warm and cold. It may then be trained to distinguish objects from one another by touch, as books, knives, pens, and pencils, and after this the different varieties of the same kind of object, as the varieties of grain, leaves, fruits, coins, or flowers. It may be trained to some extent also to distinguish shape as well as size by the sense of touch.

Of course most of these exercises ought to be given before the child enters the school, but an enterprising teacher will be able to do much, even in school, in the way of training the senses, and at the same time create much interest and amusement by having an occasional short exercise in sense-training.

7. Cautions to be Regarded.

The system of teaching by object-lessons, like all other systems of teaching, is likely to be abused by those who do not fully appreciate the importance of the system and the importance of the educational principles on which it is based. Errors are likely to be made which may seriously interfere with the success of the system. The chief cautions to be regarded are the following:

Cautions.—1. In teaching by object-lessons remember that the aim is to secure culture and impart instruction.

2. Holding an object before a class and simply asking questions as to what it is, what it is for, where it is found, is not properly an object-lesson.

3. Do not tell a child what you can lead him to discover for himself.

4. Do not give the child a number of words to be memorized and given in answer to your questions.

5. Train the child to observe for itself, even though its first efforts be erratic and of little practical benefit.

6. Be careful that the children acquire ideas rather than words.

7. Adapt the subject and the matter of the lesson to the capacity of the children to be taught.

8. Give short rather than long lessons.

9. Let your lessons be systematic, giving lessons on form, color, etc., before you take up those of a fragmentary or promiscuous character. Each lesson should have an aim, and should legitimately follow its predecessor.

10. Do not try to develop in the mind of the child thoughts with which he is already familiar.

11. Do not permit yourself and your pupils to become so much interested in the objects that you neglect the lesson to be derived from the object.

12. Object-lessons should not be given from books. If the teacher cannot trust his memory as to what he wants to do, he should have an outline of his work. The man who gives an object-lesson must be alive and awake in the presence of his class.

A course of object-lessons should include lessons on *Form* and lessons on *Color*, since form and color are the two qualities of objects to which the child gives most

eager attention. To these may be added lessons on the *Parts of Objects*, the general *Qualities of Objects*, the *Uses of Objects*.

Lessons on Form.

Children at an early age learn to distinguish objects by their shape or form. It is, indeed, the variety in form which first attracts the attention of the child. Were all objects of the same shape, they would attract no more notice than so many bricks or similarly-shaped pieces of timber. The child learns form by the difference in shape. It seems proper, therefore, that a course of object-lessons should begin with lessons on form. This same principle was recognized by Froebel in placing before the child the cube, the sphere, and the cylinder as the second gift.

It must be remembered that it is not sufficient to point out an object, call attention to its shape, and then give the name; the child himself must be taught to distinguish the form and associate the name. He must be trained to gain knowledge for himself. He must be led to observe closely everything with which he comes in contact, and thus train his power of perception and lay the foundation for an harmonious mental development.

The first lessons in form may consist in the selection of such objects as those with which the child is familiar. But among these should be such as are similar in shape, as a ball, an orange, or a marble, to represent the sphere; a pencil, a stick of candy, to represent the cylinder; and other objects to represent squares, circles, cubes, and the other geometrical figures. Of course these technical names need not be used in the first lessons. Instead of

these the teacher may use the terms ball-shaped, shaped like a lead pencil, shaped like a ring, etc.

These lessons on similarity of shape should be followed by such as distinguish differences in shape, and from these the lessons would naturally pass to the ordinary geometrical forms, including lines, angles, etc.

If possible, the teacher should have a box or a chart of forms. The plane figures may be cut from cardboard, and the others may be cut from apples or potatoes in the absence of the prepared forms which are manufactured for use in giving a series of these lessons.

The pupils should also be required to reproduce such forms as they can on slate, blackboard, or paper; it will give them pleasant and useful employment, and at the same time serve to keep them busy.

Instruction in geometrical form should begin with lines, and from these proceed to angles, surfaces, and finally volumes. The lessons on lines should also include the positions of lines. The following outline of forms may prove valuable:

- 1. Elements.
  - Lines,
  - Angles,
  - Surfaces,
  - Volumes.
- 2. Lines .....
  - Straight,
  - Curved,
  - Broken.
- 3. Position of lines.....
  - Oblique,
  - Vertical,
  - Horizontal,
  - Parallel,
  - Perpendicular.
- 4. Angles.....
  - Acute,
  - Obtuse,
  - Right.
- 5. Surfaces....
  - Triangles,
  - Quadrilaterals,
  - Pentagons,
  - Hexagons,
  - Heptagons, etc.,
  - Circles.
- 6. Triangles..
  - *a*. Sides...
    - Equilateral,
    - Isosceles,
    - Scalene.
  - *b*. Angles.
    - Right-angled,
    - Acute-angled,
    - Obtuse-angled.
- 7. Quadrilaterals.
  - Parallelograms.
    - Square,
    - Rectangle,
    - Rhombus,
    - Rhomboid.
  - Trapezoid,
  - Trapezium.

8. Parts of a circle.
   - Circumference,
   - Diameter,
   - Radius,
   - Arc,
   - Chord,
   - Segment,
   - Sector,
   - Quadrant,
   - Semicircle,
   - Semi-circumference.

9. Volumes.
   - Prism.
     - Cube,
     - Parallelopipedon,
     - Triangular prism,
     - etc.
   - Pyramid,
   - Frustum of pyramid,
   - Cylinder,
   - Cone,
   - Frustum of cone,
   - Sphere.

To these might be added the conic sections, parabola, hyperbola, and ellipse; also other figures, as the crescent, spirals, ovals, hemispheres, and spheroids.

Lessons in Color.

The form of objects is taught almost wholly by the use of the eye. In a similar manner the eye alone is used to determine color. Indeed, sight is the most useful, as it is the most nearly perfect, of our senses. Lessons in color are therefore valuable in giving training to our most important sense.

Color-Blindness.—Some persons are incapable of distinguishing colors definitely. Many are unable to distinguish between green and blue in the sunlight, and a still greater number are unable to distinguish between these two colors by lamplight. Many also are unable to distinguish any of the intermediate colors between black and white. A prominent lawyer acquaintance always insisted on calling his green satchel red, and I have in mind now a former pupil who was afflicted with color-blindness to such an extent as to be unable to distinguish red from green, both colors appearing the same to him. On pointing out a scarlet geranium flower to him, he insisted that the scarlet flower and the green leaf had the same color. On asking him how he distinguished the red cherry from

the green leaf, his facetious reply was that he had two tests —one was by the difference in shape, and the other by the difference in taste.

Prof. Calkins makes the following statements: "That the celebrated chemist Dalton thought the red gown in which he was installed was a blue one, and that on his friends giving him a pair of red stockings to wear, instead of the white ones he usually wore, he could notice no difference except that they appeared to him to be rather dirty.

"Bartholomew the sculptor could not distinguish between a crimson curtain and a green one. Yet he began his artistic career as a portrait-painter, and once gave the cheeks of a female sitter a hue of bright green."

It was estimated from examinations made in England and Scotland "that one person out of every fifteen was unable to distinguish all the ordinary colors; one in fifty-five confounded red with green; one in sixty, brown with green; one in forty-six, blue with green.

The causes of color-blindness have not yet been discovered, nor is it yet known whether early training can overcome the defect or not; but certainly something can be done to teach those who are not color-blind to distinguish not only color, but shades of color, at an early age.

Every school should be supplied with a chart of colors, and pupils should be supplied with colored cards or worsteds to correspond with the colors on the chart. By comparing the colored cards with the chart, and by the teacher's requiring the pupil to select colors when named, most pupils can be trained to distinguish without difficulty.

Prof. Calkins advises, in addition to the color-chart and colored worsted, "a box of colored cards, a set of color cubes, pieces of silk of various colors, sealing-wax, wafers, colored papers, flowers and fruits in their season, a glass prism, colored crayons for the blackboard, etc." He also suggests as a substitute for the color-chart that the teacher procure a piece of perforated cardboard and work upon it squares of about two inches with colored worsteds, leaving inch-spaces between.

An ingenious contrivance which answers the double purpose of numeral frame and color-chart was described to me by a young lady, who says she stretches twelve wires from one side of the window-frame to the other, on which she places spools wound with worsteds of the different colors, and in this way is enabled to teach both color and number by means of the same piece of apparatus.

For a detailed course of lessons on color no book is superior to Calkins's *Primary Object-Lessons*, a work which every teacher should possess.

The first step consists in teaching the three *primary* colors—*red*, *yellow*, and *blue*. The pupil may be taught also that these are known as the primary colors because they cannot be produced by the combination of any other colors.

In teaching the *secondary* colors the children should be taught that they are named secondary because each of them is composed of two other colors; thus, *green* is a mixture of *yellow* and *blue*; *orange*, a mixture of *red* and *yellow*; *purple*, a mixture of *red* and *blue*. These six colors, with the addition of *indigo*, which is a combination of *purple* and *blue*, are the colors of the rain-

bow, and are known as the prismatic colors, because when a ray of light is dissolved by means of a prism it is found to consist of these colors.

After pupils are able to distinguish the primary and the secondary colors they may be taught to distinguish the principal shades, tints, and hues.

By a *shade* is meant any color produced by mixing some black with the original color, and thus producing a darker color; thus, the shades of *red* are maroon, crimson, magenta, etc.; of *yellow*, citrine and saffron; of *blue*, indigo, prussian blue, plum-color, etc.

By a *tint* is meant any color produced by mixing some white with the original color, and thus producing a lighter color; thus, the tints of *red* are pink, rose, etc.; of *yellow*, straw and primrose; of *blue*, light blue, sky blue, etc.

By a *hue* is meant the combination of two colors in unequal proportions; thus scarlet, cherry, and vermilion are hues of *red;* lemon, sulphur, and canary, hues of *yellow;* salmon and buff, hues of *orange;* emerald, pea-green, sea-green, hues of *green.*

The irregular common colors may also be taught at this time, as brown with its varieties, chestnut, chocolate, russet, auburn, snuff, etc.; and gray with its varieties, steel-gray, pearly gray, etc.

Pupils should be trained to distinguish colors that are alike; after that those which are unlike. After this they should be required to select objects and group them according to color. The words

Red, Yellow, Blue, White,

may be written on the board as indicated, and under these, or a similar heading on the pupils' slates, the

children should place the names of objects which have the color mentioned.

They may be taught also by actual experiment with paints or crayons the result of mixing colors; thus, that red and blue produce purple; red and yellow, orange; etc. This may be done with water-color paints on paper, or even with colored crayons on the blackboard.

The complementary colors, or those which produce white light, may be explained to the children. They may be taught that of two complementary colors one is primary and the other secondary, thus making together the three primary colors. These colors may be grouped as follows:

1. Red and green, { blue, yellow.
2. Blue and orange, { red, yellow.
3. Yellow and purple, { red, blue.

Lastly, they may be taught that certain combinations of color are pleasing to the eye, because they are harmonious. The complementary colors are always harmonious. The following colors are given, with those with which they harmonize:

Blue.—1. With salmon, drab, orange, white, straw, maize, chestnut, brown, black, or gold.

2. With scarlet and purple, orange and black, orange and green.

3. With brown, crimson, and gold; or orange, black, and white.

Black.—1. With white, orange, maize, scarlet, lilac, pink, slate, drab, or buff.

2. With yellow and crimson.

3. With orange, blue, and scarlet.

Crimson.—1. With drab, gold, orange, maize, or purple.

Green.—1. With scarlet, gold, yellow, or orange.

2. With scarlet and blue.

3. With crimson, blue, and gold.

Lilac.—1. With crimson, gold, maize, cherry, or scarlet.

2. With gold and crimson.

3. With scarlet, black, and white; yellow, scarlet, and white.

Purple.—1. With gold, maize, or blue.

2. With scarlet and gold, or scarlet and white.

3. With scarlet, blue, and orange.

Red.—1. With gold, white, or gray.

2. With orange and green, or yellow and black.

3. With gold, black, and white,

Scarlet.—1. With slate-color, white, or green.

2. With black and white, blue and white, or blue and yellow.

3. With blue, black, and yellow.

White.—1. With scarlet, crimson, cherry, pink, brown, black, or blue.

Yellow.—1. With chestnut, brown, red, crimson, black, or purple.

2. With purple and crimson.

3. With purple, scarlet, and blue.

Orange.—With blue, black, crimson, or green.

Harmony of color should always be considered in house-decoration, in the choice of furniture, in the arrangement of rooms, wearing apparel, bouquets, and

wherever else there is an opportunity to cultivate the taste of children.

Objects and their Parts.

In order to give valuable lessons on objects, the teacher should have a collection of various objects on hand from which he may select. The object should be placed before the class where each pupil may examine it thoroughly and prepare to name the different parts of which it consists, together with the use of the object itself and the uses of the various parts. The following lesson will suggest the method to be pursued:

MODEL LESSON.

Subject.—A HAT.

The teacher holds the hat before the class and asks the name of it. The name is then spelled and written on the blackboard. He then points to a particular part of the hat and asks the name. The answer is probably *body*. The word *Parts* is written on the board, and under this the word *body*. Pupils are asked to name other parts as each part is touched in succession by the teacher, and all the names given are written in the column under the word *Parts*. The column will probably consist of the following: *body, brim, crown, band, binding, lining, trimming.*

The teacher then asks the pupils to touch particular parts of the hat as he names them. He also asks them to point to the word on the blackboard while some other pupil points to the part and another names it.

After having learned the parts, the teacher may ask

for the use of the hat; then the use of each individual part, and as these uses are mentioned they may be written on the board opposite the parts named. The table will stand somewhat as follows:

Hat.

Parts.	*Uses.*
Body:	To cover the sides of the head and give shape to the hat.
Brim:	To protect the neck and the face from sunlight and rain.
Crown:	To cover and protect the top of the head.
Band:	To keep the hat from getting too large; to make it look well.
Binding:	To keep the edge of the brim from wearing out.
Lining:	To keep the sweat of the head from soiling the material of the hat.
Trimming:	To make the hat pretty and attractive.

As far as possible, the shape and the color of the various parts may also be the topics for questions, and before the lesson closes the pupils may be called on individually to name each a part of the hat and tell its use, thus, pointing to the brim of the hat: "This is the *brim* of the hat; its use is to protect the head and the neck from sunlight and rain."

Similar lessons may be given on any of the following objects: table, chair, stool, bench, box, desk, pencil, bell, clock, etc.

The following list of objects, with the parts named, is given with the hope that it may prove valuable to inexperienced teachers:

- 1. Pin.....
  - Point,
  - Head,
  - Shaft.
- 2. Chair....
  - Back,
  - Seat,
  - Legs,
  - Rounds.
- 3. Door.....
  - Panels,
  - Hinges,
  - Stiles,
  - Rails,
  - Latch,
  - Lock.
- 4. Scissors.
  - Blade,
  - Bows,
  - Limbs,
  - Rivet,
  - Edges,
  - Back,
  - Point,
  - Shaft.
- 5. Key...
  - Ring,
  - Shaft,
  - Barrel,
  - Lip,
  - Wards,
  - Grooves.
- 6. Bell...
  - Handle,
  - Cup,
  - Tongue,
  - Mouth.
- 7. Apple.
  - Stem,
  - Peel,
  - Pulp,
  - Juice,
  - Veins,
  - Eye,
  - Dimples,
  - Core,
  - Seeds,
  - Seed-case.
- 8. Cup...
  - Bowl,
  - Handle,
  - Upper rim,
  - Lower rim,
  - Bottom,
  - Inside,
  - Outside,
  - Edges.
- 9. Cent..
  - Surface,
  - Edges,
  - Faces,
  - Milling,
  - Impression,
  - Image,
  - Date,
  - Superscription.
- 10. Knife..
  - 1. Handle,
    - Rivets,
    - Frame,
    - Heel,
    - Sides,
    - Back,
    - Spring,
    - Grooves,
    - Plate.
  - 2. Pivot,
  - 3. Blade...
    - Edge,
    - Point,
    - Back,
    - Notch,
    - Sides,
    - Maker's name.
- 11. Shoe.
  - Upper,
  - Sole,
  - Heel,
  - Tip,
  - Eyelets,
  - Binding,
  - Seams,
  - Tongue,
  - Lining,
  - Insole,
  - Counter,
  - Shank,
  - Welt,
  - Strings,
  - Buttons,
  - Vamps.

The teacher will be able to outline a number of other topics with sufficient accuracy to make them both interesting and instructive.

Lessons similar to the foregoing, but more extended in character, may be given after the children learn to distinguish the respective parts readily; thus, not only the parts of objects and the uses of the parts may be taught, but also the material of which the parts consist, where this material is obtained, and by what persons the various parts are prepared.

Qualities of Objects.

Following naturally in order after the lessons on the parts of objects come lessons on the qualities of objects. Thus, in a lesson on glass we could teach that it is transparent, brittle, smooth, colorless. In connection with this might be taught the uses of glass, the kinds of glass, and the process of manufacture. Material enough would be found in this topic to make a half dozen or more lessons.

The difference between qualities should be taught by illustration; thus, between rough and smooth, transparent and opaque, etc. The names of a number of objects as given by the pupils should be written on the blackboard, and thus the difference might be impressed more firmly on the minds of the children. For instance, in teaching children that transparent objects are those through which we can see clearly, and that opaque objects are those through which we cannot see, let the columns on the board be arranged somewhat as follows:

Glass, Water, Alcohol, Air, Some ice,	are transparent.	Slate, Iron, Stone, Wood, Lead, Chalk, Tin, Silver, Gold, — are opaque.

Let the questions be asked, Why do we say glass is transparent? Why do we say gold is opaque?

In a similar manner the difference may be taught between

Hard and soft,
Brittle and flexible,
Light and heavy,
Rough and smooth,

Transparent and translucent, Solid and liquid,
Combustible and inflammable, Adhesive and cohesive,
Natural and artificial, Odorous and aromatic;

and thus also the qualities indicated by the words flexible, ductile, elastic, malleable, sonorous, concave, convex, spherical, cylindrical, brilliant, soluble, serrated, edible, tasteless, nutritious, porous, fibrous, etc.

A higher course of object-lessons would embrace the elements of the various natural sciences—botany, physiology, geology, mineralogy, zoology, and others.

LANGUAGE.

Introduction.

Language is the means by which we communicate our thoughts to one another. The word is derived from the Latin *lingua*, the tongue, and meant, primarily, spoken language. The term is now, however, applied to both written and spoken language. Language is necessary to thought, and it was held by even so eminent an authority as Sir William Hamilton that there can be no thinking without words.

A course of instruction in Language includes instruction in Talking, Reading, Pronunciation, Orthography, Lexicology, Grammar, Composition, and Rhetoric. This course may be extended in the higher grade to the study of English Literature and English Classics, Philology, and the various foreign languages.

Learning to Talk.

This part of the work is usually completed before the child reaches school. At least, the child has already learned to use its organs of speech in the articulation of the usual sounds of the language it speaks, and it already possesses a reasonably full vocabulary. It learns its language at the home fireside, partly by imitating the speech of its associates, partly by the law of asso-

ciation as it hears the names of objects and actions called from day to day in the ordinary intercourse of the family.

The teacher has but little to do except correct false articulation, mispronunciation learned at home, and add to the vocabulary of the child from day to day as he communicates knowledge and suggests new ideas. Both teacher and parents should be specially careful to use only correct speech, in order that the language of the child may be correct as a habit; for this, like all other habits, will prove lasting. We are all witnesses in our own speech to the truth of this statement. The speakers and writers who make no mistakes either in pronunciation or in the grammatical use of language, from Shakespeare and Addison down, are indeed rare.

CHAPTER I.

Reading.

The first important work that the child undertakes on entering school is that of learning to read. This becomes necessary to all other school-work, and it is therefore the first duty the teacher has to perform if the child does not already know how to read.

In learning to read two things are necessary primarily: these are, first, that the pupil must learn to read *intelligently*—that is, read the page silently, recognizing the printed or written signs as words representing thought, and have an intelligent understanding of what he reads; secondly, the child must read *intelligibly*—that is, read to others in such a manner that they may understand clearly what is meant by the author. To these two may be added two other essentials—that the child must read *gracefully*, and that he must read *forcefully*—and we have the essence of all good reading and all good elocution. Formulated, the essentials are these:

1. *The child must read intelligently;*
2. *He must read intelligibly;*
3. *He must read gracefully;*
4. *He must read forcefully.*

All teaching of reading must aim at accomplishing these four things.

I. Objects of Learning to Read.

The two main objects of teaching a child to read are—

1. To enable him to gain information.
2. To enable him to impart information.

These objects must be kept constantly in view. No advocate of oral instruction, however extreme, would claim that a child should acquire his knowledge entirely through the oral instruction of the teacher. Children must learn to read in order to acquire knowledge, and also that they may impart knowledge to others by reading.

To the foregoing may be added a third object in learning to read—namely, *pleasure*. The pupil learns to read partly for the pleasure which it will afford him in after life to peruse newspapers, magazines, and books, and not only glean from the printed page the news of the day, but also be able to enjoy the beauties of thought and language with which he meets in his reading of the best literature. Under the head of pleasure as an object of learning to read may be included also the pleasure which elegant reading affords the hearer. We learn to read not only that we may please ourselves, but also that we may be able to please others. How few there are who can at random take up a newspaper, a magazine, a volume of poems, a biographical sketch, or a narrative of travels, and read each equally well to their friends or visitors at the home fireside! Fireside reading has been too much neglected in our efforts to make elocutionists and dramatic readers.

Silent reading is important. Indeed, it should be the

main purpose in teaching reading to train the pupils to think and gather everything possible from the printed page. "Systematic reading," says a prominent elocutionist, Russell, "is a valued means for cultivating reflective habits of mind, which is study, not perusal—reading which is attentively done, carefully reviewed, exactly recorded, or orally recounted."

Much time should be devoted by the pupil to reading solely for the sake of reading. It would be wise to place in the hands of pupils choice stories, books on biography, interesting history, anecdotes, travels, and even fiction, with the double purpose of giving them enjoyment and creating a taste for reading. This would also give an impetus to fireside reading, and create a desire for reading such literature as would prove not only interesting, but also valuable. Indeed, most of the censurable habits into which children unconsciously fall while learning to read at school, such as monotone and drawl, might be entirely avoided if the habit of silent reading were more liberally encouraged at home.

II. Methods for Beginners.

The subject of reading may properly be divided into Primary Reading and Advanced Reading, the latter usually known as Elocution.

In the teaching of reading to beginners pronunciation and articulation are important elements to be considered; but the great mistake which has characterized, and which does characterize, most of our schools, even to-day, is the teaching of pronunciation for reading proper. It must be remembered that pronunciation is but an element of reading, and not reading itself. When pupils,

therefore, pronounce the words of the lesson without giving proper expression, they do not read, any more than when they pronounce the words in the columns of a spelling-book; and yet it would be safe to say that this is called reading in nine-tenths of the schools of America to-day. It is simply pronunciation.

Care must be taken to adapt the sentiment and difficulties in all books on reading to the capacity of the pupils to be taught. It is the failure to do this that has so often led the pupil to fall back on the pronunciation of words alone as being true reading. It is quite as easy for the pupil to read or say naturally, "This is my horse," or "I have a little kitten," as it is to read, "I am up," "We go up," "Up we go," and similar absurdities, besides being a great deal more natural and more sensible. The child learns to recognize horses, cows, etc. quite as readily as it recognizes gnats, mosquitoes, or other insects. It is not the size of the word, any more than it is the size of the animal, that makes its form familiar.

No one doubts or questions the importance of being able to read well either orally or silently, but to secure this result the first efforts must be put forth in the direction of having the child read intelligently; and to secure this intelligent reading must be at first the chief work of the teacher. Intelligent reading leads to intelligible and expressive reading, and it should begin with the first sentence the child attempts to express.

There is no good reason why a child should ever be permitted to drawl a sentence or read it in monotone, any more than there is for his drawling out the words in his conversation, however animated it ought to be. Here is the first skirmish, and, this once having been won, the

battle is easily fought at all other points. More than three-fourths of the teacher's work in the reading-class consists in a continuous struggle to correct a habit which the pupil ought never to have been permitted to contract.

In the beginning-steps of teaching a child to read a number of methods have been devised to enable him to call the words of a sentence. The most important of these are known, respectively, as—

1. The Alphabetic Method;
2. The Word-Building Method;
3. The Word Method;
4. The Object Method;
5. The Phonic Method;
6. The Phonetic Method;
7. The Sentence Method;
8. The Group Method.

1. The Alphabetic Method.

By this method, which was formerly in general use, and which is much used even yet, the pupil is taught first the letters of the alphabet, either wholly or in part. When he is familiar with these, he is made to synthetize words by naming the letters of which the words are composed, or, as it was formerly termed, "spell on the book," and then pronounce the combination. But little if any attention is paid in this method to the meaning of words.

One of the chief objections to the method is, that the child is taught words instead of ideas. In this respect the rule that the child should begin with intelligent read-

ing is violated. The pupil begins to read without understanding what he reads, and is therefore unable to express himself in such a manner as to be understood by others.

A second objection is, that the pupil by this method attempts to read and spell at the same time, and thus does neither well. Indeed, his attention is often distracted from the sentiment to be expressed while he is attempting to decipher a word by "spelling it out," and thus he falls naturally into a drawling tone, holding on to one word until he is sure of the next.

2. The Word-Building Method.

The Word-Building Method is a modification of the Alphabetic Method. It begins with a few letters of the alphabet, *a*, *i*, *o*, and adds to these other letters to form words. Thus, to the letter *o* is added *n*, and the child is taught that the two letters form the word *on;* to this is added *e*, and the child is taught that the new product is the word *one;* thus also is added *t* to make *tone*, and *s* to make *stone*. The method was in use in Europe about half a century ago, and it was used also in this country to a limited extent for some time.

It is a pleasant exercise for the purpose of giving variety to the school-work, but inasmuch as our language is not built up by individual letters, but rather by words, it is apt to lead the pupil into etymological errors which may require years of the best teaching to eradicate. *On* is not formed from *o*, nor *one* from *on*, nor *tone* from *one*. The system, to say the best of it, is one that ought to be pursued only as an occasional exercise.

3. The Word Method.

The Word Method begins by teaching words as wholes, just as children learn to recognize objects as wholes rather than by noticing the individual parts of which they are composed. Among the first to use this method in this country was Professor Webb, after whom it was for a time named "the Webb Method." In England it is generally known as the "Look-and-Say Method," also as the method of "Reading without Spelling." Among the first to advocate this method was a French philosopher, Jactotet, who lived from 1770 to 1840.

This method teaches words as the representatives of things, actions, relations, etc. It does not teach the alphabet at all, but leaves the pupils to learn the names of the letters after they have acquired a knowledge of a sufficient number of word-forms to begin reading. When properly used, the Word Method begins with the oral or spoken word, and then introduces to the pupil the printed or written form which represents it. The correct principle is—first the idea, then the spoken word, and following this the printed or written form.

The Word Method is one of the most valuable, and is the method mainly used by progressive teachers. It is closely related to what may be denominated the Object Method, which is here given more in detail.

4. The Object Method.

This method, as has been said, is similar in many respects to the Word Method. It, however, begins farther back than the Word Method. It begins not with the word, but with the object itself. The attention of the pupils is directed to some object with which they are

familiar. The object is shown to the class, or, in the absence of the object, a picture of it. The name is given by the pupils, and then this name is both printed and written on the blackboard or pointed out on a card. The pupil is then taught to distinguish the word from the picture. By some teachers the child is taught to distinguish between the *object* and the *picture*, but this is wholly unnecessary to correct teaching. Besides, there are but few suitable objects, particularly of the animal kind, which the teacher can with safety bring into the school-room without attracting more attention than he would find desirable.

After the child has learned to associate the word-form with the picture, the manner of teaching by the Object Method does not differ essentially from that of the Word Method.

The chief value of the Object Method lies in the fact that it is the natural method, and it best harmonizes with the law of mental development. The child, seeing the object, has first the idea, then the spoken name, and lastly it becomes familiar with the printed and the written name, thus proceeding regularly from the known to the unknown in its acquisition of knowledge. Words by this method are taught as the representatives of the objects and their spoken names.

After the pupils have become familiar with a few word-forms as learned by the Object Method, they may be required to reproduce these, and at the same time analyze the words into the letters of which they are composed. This will be found a valuable exercise in fixing the form of the word in the mind of the child.

To illustrate: Take the word *hat*. After the children

have been taught to distinguish the form as placed on the blackboard by the teacher, let them select the same word on a reading-chart, or from the reading-book, or from among several words placed on the blackboard; then let them proceed to copy the word on their slates, the teacher first having erased from the board all other words except this one. The children may even be permitted to go to the blackboard and with crayon write or print the word a number of times on the board. They enjoy this part of the work, and unless they become noisy there seems to be no good reason why they should not be indulged in it, particularly as a reward for good conduct.

A second step in this method is that suggested above, of having the pupils analyze the word into the letters of which it is composed. Thus, in the word *hat;* let it be printed somewhat as follows, first as a whole and then with the letters separated:

hat

h a t

Also written, as follows:

hat

h a t

Let the pupil have exercise in both the printing and the writing of the word, but at the earliest possible moment dispense with the printing entirely as an exercise, except for the purpose of training him to learn to recognize readily the printed form. Pupils will make much more rapid progress if taught early to write their lessons instead of printing them on the slate, and much valuable time will also be saved.

As a third step the pupil may be readily taught the sounds which compose the words. The easiest plan to reach this result is to have him pronounce the word in imitation of the teacher, as heard in ordinary conversation or good reading, then pronounce it more slowly, still imitating the teacher's pronunciation, and finally separate the sounds from one another, making each one distinct when uttered. The teacher is of course the guide, and the pupil continues to imitate until he is able to deal with words without the teacher's help, and name both the letters and the sounds of which a word is composed, or until he is able to spell the word both literally and phonically.

5. The Phonic Method.

This method consists chiefly in teaching children the elementary sounds of the language, rather than their names, and then having the children use these sounds in learning to read. Thus, in teaching the word *man*, the child is taught not the letters *m*, *a*, *n*, but the sounds represented by these letters.

The most serious objection to this method lies in the fact that the English language has only twenty-six letters, while it has fully forty elementary sounds. The child has no sooner learned that *a* has a short sound, as in *at*, than he meets it with a long sound, as in *ate;* and he learns soon thereafter that it has a still different sound in *far*, and yet another in *fall*, while in the word *fare* the sound differs from the other four. The method is impracticable in any language where the number of elementary sounds is so much greater than the number of characters to represent them; it is impracticable also

where the same sound is represented by several characters or combinations, and where the use of silent letters is one of the peculiarities of the language.

Another defect of the Phonic Method lies in the fact that it is unphilosophical, because it begins with individual sounds, which the child can know only by hearing the teacher articulate them, and proceeds to the words of which these sounds are elements. It begins with the unknown and proceeds to the known, thus violating one of the most important educational principles.

6. The Phonetic Method.

This method differs from the Phonic Method in requiring a special character to represent each sound. It uses the present alphabet to designate twenty-six of the sounds, a variable letter always representing that sound of the letter most frequently used, and provides slight modifications of the letter-forms to represent the other sounds. Thus, all sounds of *a* except the short sound are by this system represented by modifications of the character *a*.

In print the silent letters appear in very light, hair-line type, and those letters which are sounded in heavier type.

A modification of the Phonetic Method is that indicated by placing the macron (-), the breve (⏑), and other diacritical marks with the letters as found in the standard dictionaries.

Another modification of the Phonetic Method is that known as the Phonotypic Method, which consists in providing a special character for each sound of the language. The pupil's alphabet is made to consist of forty or more characters instead of twenty-six.

It may be said of the Phonetic Method that, while it is more rational than the Phonic, it still is open to serious objections, and can be used effectively only in a language whose whole literature is printed in the characters which the child is taught at school. It simply postpones for a time the difficulties which the child must overcome in learning to read.

7. The Sentence Method.

This method begins with sentences rather than letters or words. The thought is expressed first orally, and then the printed or written expression is presented and taught. The method is based on the theory that the sentence is the unit of language; in other words, that we think in sentences rather than in words, and that we ought therefore to read in sentences rather than in words.

It is held by the advocates of this method that the eye always keeps in advance of the voice, and that we shape our expression by the general thought rather than by the individual words of the paragraph. It is claimed also that pupils who learn to read by this method learn to express themselves more naturally.

The opponents of this method urge the following objections:

1. That the word, and not the sentence, is the unit of language.

2. That pupils who learn by this method soon begin to recognize the separate words, and consequently read by words rather than by sentences.

3. That it is impossible to teach all, or even a large number, of sentences in this way, and consequently the pupil must, after all, ultimately learn to read by words.

8. The Group Method.

The Group Method is based on the Object Method and the Word Method combined. While it is true that the word is the unit of language, the pupil who reads words as words, without considering their relations to other words, invariably falls into the monotonous drawl so characteristic of beginners.

The Group Method takes the pupils from the point to which the Object and the Word Method have carried them, and teaches them to read words in combinations according to their relations. Thus, in reading the expression "a cat," the child is not permitted to give as much force to the word *a* as to the word *cat;* he rather combines the two words as if they constituted but one, of which the syllable *cat* receives the accent.

This same principle may be further illustrated by following out the natural grammatical divisions of the sentence. Thus, the sentences below naturally divide in expressive reading into subject, predicate, and modifiers, and are read with short natural pauses between, as indicated:

The boy has gone.
I have found my knife.
The little bird sang from her nest in the tree.
You have seen the boy coming to school very late.

Make an unnatural or ungrammatical division of these sentences and attempt to read them thus, and the importance of group-reading will appear at once. Thus,

The boy has gone.
I have found my knife.
The little bird sang from her nest in the tree.
You have seen the boy coming to school very late.

The Group Method trains pupils to read words in groups as they are used in conversation; and no method is more effective in breaking up monotone and giving proper expression, which, after all, is quite as important as distinct articulation and correct pronunciation. All other methods aim primarily at teaching pronunciation, or the calling of words, as distinct from reading proper; and every other method, therefore, to be of any value must be associated with the Group Method, whose office it is to develop expression and train pupils not to call words only, but to read in the truest and best sense of the term.

It will be noticed that the methods for which the greatest merit is claimed are the Object Method, the Word Method, and the Group Method. It may be said here, also, that the Alphabetic Method is not without some merit, and that, after all, it will be found that a large part of the teaching of those who are most successful comes back to the alphabet finally as the groundwork on which to build.

The argument which holds good with reference to the Sentence Method is equally good with reference to the Word Method. We cannot learn many sentences, it is said, as wholes, but we learn the words instead; nor can we learn a large number of words as wholes except

by long experience. In all our teaching, therefore, we find it convenient, after having taught a vocabulary of from sixty to a hundred words, to analyze these words into the letters of which they are composed; and practically we teach the letters of the alphabet at some time, whatever may be our theory or however it may contradict our practice.

We do teach the alphabet, and our pupils, like ourselves, whenever they meet a word new to them, make an effort to pronounce it from their knowledge of the letters of which it is composed and the powers which those letters have under various forms of combination. If that knowledge be defective, the pronunciation may be incorrect, but it will be correct or approach correctness according to our knowledge of the powers of the letters. Were this not the case, our knowledge of pronunciation must end with the reading-lesson given by the teacher, and our progress with our school-days.

Pupils learn new words by their *analogy of form*. Let the teacher, after having given an interesting lesson on the word *hat*, and placed the word on the blackboard, write a number of words of similar form in the same column or in several columns, as follows:

bat	hat	rat
cat	mat	sat
fat	pat	vat

The pupils will readily learn to pronounce the whole of them in a very short time if they know the letters of the alphabet. They may miss the word *cat* and call it *sat*, because the name of the latter may mislead them, but they will not mispronounce the others if the teacher is

careful to call their attention to the shape of the mouth while pronouncing the first letter of the word. Thus, by a single lesson they may learn eight or nine words, where by the Word Method alone it would require a much longer time.

A great number of words may be given in this same way in which it is necessary to make only a slight change in the form of each word. The following will serve as an example:

get	bin	bit	den	bun	cot
let	din	fit	hen	dun	dot
met	fin	hit	men	fun	got
net	kin	lit	pen	gun	hot
pet	pin	mit	ten	pun	lot
set	sin	sit	fen	run	not
wet	tin	pit	wen	sun	rot

An excellent exercise is that of giving the pupils in class the termination, and allowing them to form the words; thus, give them such terminations as *an*, *at*, *on*, *ot*, etc., and let them form words by prefixing various letters. Some of them will write many more words than others, but all will be benefited by the exercise.

By this method of teaching, the alphabet, pronunciation, and elementary reading are all closely associated, and it would be difficult to separate the processes, even if it were desirable.

Suggestions on Teaching Primary Reading.

The following suggestions will be of value to the teacher, whatever may be the method he pursues in teaching Primary Reading:

1. **Pronouncing at Sight.**—Whatever method is pursued, it is a matter of great importance that before the pupil attempts to read aloud he should be able to pronounce every word in the sentence. This is necessary in order that he may give his entire attention to the matter of expression, and read naturally; and it can be best accomplished by the teacher's giving a drill on the pronunciation of the words in the sentence before the child is permitted to attempt to give oral expression to the sentiment.

2. **Reading in Natural Tones.**—Require your pupils to read in natural tones, such as they are accustomed to use in conversation. The fault they will most likely commit is that of reading either on a high, unnatural key, or in tones so low that but few in the class can catch the sound distinctly.

3. **Correct Reading.**—See that pupils read correctly and with proper expression from the beginning. The first lessons are the most important, because then the habits are formed which will make the pupil either a pleasing or a slovenly reader for much of his school-life.

4. **Distinct Articulation.**—Insist on distinct articulation. When the vocal organs are yet flexible is the time to give drill in the sounds of the language. Frequent drills on the articulation of the elementary sounds, and on combinations of these sounds, will prove specially valuable.

5. **Graceful Posture.**—See that the posture of your pupils while reading is graceful. They should stand erect, and in holding a book hold it so that those to whom they read can see the movement of the reader's

lips. The position of the pupil should be entirely free and unrestrained. The book should be held in the left hand, and the right hand be kept free to turn the leaves or make gestures if necessary.

6. **Train to Catch the Thought.**—It is important for pupils to catch the thought of the author, in order that they may express it properly when reading. Pupils may frequently be trained to think more clearly by a series of judicious questions put by the teacher. He may awaken thought also by means of a conversation with them on the subject and contents of the lesson, and sometimes by reading their lesson to them in a natural tone and with correct emphasis and inflection.

7. **Make Haste Slowly.**—The teacher must not become discouraged because the pupils seem to make but slow progress. At best, it is tedious work to teach a child to read, but a child well taught during the first year of its school-career is well taught for life, and the subsequent teaching is comparatively easy. The teacher should see that correct habits are formed and that the child reads understandingly, even though the progress be slow at first. If the foundation be well laid, the superstructure will be all the more substantial.

8. **The First Steps.**—An interesting exercise, and also a valuable one, is that of having pupils fill blanks as the teacher supplies a part of each sentence; thus, the teacher may write a single word, say the predicate of a sentence, as *play*, and request the pupils to tell what play. The answers may be written on the board, the exercise standing somewhat as follows:

Boys play.
Girls play.

Lambs play.
Dogs play.
Etc., etc.

The pupils should be required to read each of these, when it will be found that they naturally emphasize the newly-introduced word. The exercise may now be changed so that they write predicates instead of subjects; and in reading them it will be found that they now emphasize the predicate as the new word introduced.

9. **Writing Lessons on Slate.**—From the very beginning pupils should be required to copy at least a portion of their reading-lessons on their slates. Several benefits arise from this practice: the form of the word and the letters of which it is composed are impressed on the mind of the pupil; he receives muscular training of the hand; he learns to some extent the use of capital letters and punctuation-marks; and the exercise secures attention to the work.

Should the pupil not be able to write at first, he may print the lessons on his slate, but he should write as soon as possible, and at least one paragraph should be copied by him from every lesson. It would be better to copy the lessons in the First and the Second Reader in full.

10. **Mispronounced Words.**—All words mispronounced during the lesson should be written on the blackboard, where they may be seen by the class. These should be copied by the pupils on their slates, and the proper pronunciation of them be learned for the next recitation. The teacher should also place before the pupils a list of words most frequently mispronounced, and the pupils

should have frequent drills on the proper pronunciation of these words.

11. **Incorporating Words.**—It is an excellent practice to have pupils substitute words in sentences. This gives them a knowledge of synonyms, and at the same time shows that they understand what they are reading. It is also a good plan to have them take words of the reading-lesson as selected by the teacher and incorporate them in sentences of their own construction. They will thus learn the use of words much more readily than by the formal definition.

12. **Familiar Words.**—All lessons at first should contain only familiar words, such as the pupil is likely to have as a part of his own vocabulary, or such, at least, as he knows the meaning of, though he may not have used them in his own speech. Primary books should be in child-language if designed for the use of children.

13. **Definitions.**—Pupils should be permitted to define words in their own terms. As heretofore suggested, they may sometimes do this by substituting another word. The teacher should define no word for the pupil if the latter is able to define it for himself, and if the child is not able to give a definition, its substitution of a word of nearly the same meaning is better than a formal definition committed but not understood.

14. **A Combination of Methods.**—In teaching beginners a combination of methods is desirable. The Object Method, the Word Method, the Alphabetic Method, the Group Method,—all or a combination of all should be used. After learning a number of words by the Object Method, the methods practically combine and intermingle, and the difference is so slight and of so little im-

portance that no sensible teacher will make a hobby of any one of them.

15. The Chart.—A chart in connection with the First Reader and the blackboard will be very convenient. Both chart and blackboard are useful. If no chart is at hand, the teacher may write or print both the words and the letters on the blackboard, and have the pupils copy from his work.

16. Short Lessons.—Lessons for beginners should be very short. It is better that the pupils should remember a very few words, and be able to call them at sight and read them in sentences, than stumble over the words of a lesson twice as great in length.

17. Single Words.—As an occasional exercise for the purpose of cultivating attention and training the pupils to pronounce at sight, it is valuable to have pupils in class read in turn sometimes but a single word, then also but a single line.

18. Reading for Pupils.—It is a good plan for the teacher occasionally to read the lesson through for his pupils before they attempt to read, particularly if the lesson be read to them before they begin to study it. In this way they are enabled to get at the sense and sentiment of the selection without wasting time unnecessarily in trying to comprehend it.

19. Imitative Reading.—An effective means of breaking up monotonous or other faulty reading at times is for the teacher, if possible, to imitate the fault. It is not wise, however, for him to imitate the reading of any particular pupil, for this may wound the feelings of the child and do very much more harm than good. It is better to imitate faulty reading in general before the

recitation begins. The pupils will not thus take offense, and yet they will make an effort to avoid the fault which the teacher imitates.

20. **Encourage rather than Criticise.**—The teacher should rarely find fault with a pupil's efforts to read. He should rather encourage the child, and when corrections are made they should be such as will benefit the reader. With many the mispronunciation of a word is a much greater offense than the most incorrect form or manner of expression.

21. **Interruptions.**—Permit no interruptions while any one is attempting to read. The reader's attention should not be distracted from what he is attempting to read, by pupils snapping their fingers or raising the hands. Any criticism that may be desirable should be reserved until he has taken his seat.

22. **Asking Questions.**—The teacher should ask questions to lead the beginner to emphasize properly. Thus, in the sentence, *That little boy writes very rapidly*, a series of questions like the following will lead the child to shift the emphasis naturally from one word to another in obedience to the teacher's wishes: Who writes very rapidly? Which boy writes very rapidly? Which little boy writes very rapidly? What does the little boy do very rapidly? How does that little boy write? How rapidly does that little boy write? A similar series of questions may be used with other sentences, and pupils be thus led out of the monotonous style of reading.

23. **Interesting Pupils.**—One of the most effective ways of breaking up monotone in reading is by creating interest in the piece to be read. This may be done partly by asking questions, partly by holding a conversation with

the class on the subject of the lesson, and partly by judiciously selecting such exercises to be read as are strictly within the mental grasp of the child.

24. **Reading to One Another.**—It is an excellent plan to have all the pupils, except the one who is reading, close their books and then give close attention while he reads. After he has finished, some one should be called upon to reproduce from memory what the other pupil read from the book. This plan is particularly valuable as an occasional exercise in giving culture to both attention and memory.

25. **Occasional Dialogues.**—These are valuable aids in training the attention of pupils and securing natural expression. Care must be taken, however, that the language and the sentiment are adapted to the pupil's capacity. The old plan of reading selections from the dramas of Sheridan Knowles and Shakespeare was simply ridiculous.

26. **Silent Reading.**—Give plenty of exercise in silent reading. Indeed, it would do no harm to permit each pupil to look over his paragraph a short time before calling on him to read aloud. This may not be necessary, however, where he has had ample time to prepare his lesson. Nearly all of our reading after leaving school is of this character, and it is therefore specially important that every one should be trained to glean the thought from the printed page.

27. **Too Critical.**—The teacher should not encourage slovenly habits in reading by permitting serious errors to pass unnoticed; but, on the other hand, he should not be too critical. The omission of an occasional word not absolutely necessary to the sense is not so serious a matter that the teacher need wound the feelings of the pupil by

calling his attention to it openly. What the child needs is encouragement, and not censure, to make it do well.

28. **Attention to Errors.**—Both constant and patient attention must be given by the teacher to the correction of defective articulation and pronunciation. Children will pronounce as they hear others pronounce at home and elsewhere, however incorrect this may be, and all, in their haste, are liable to articulate more or less indistinctly, clip syllables, or run sounds together. Much care is necessary to correct these faults.

29. **Diacritical Marks.**—At a comparatively early age the child may be taught at least the dictionary-marks for the long and the short vowel-sounds. After these are known the teacher should explain by the use of the blackboard and teach each of the other marks, being careful not to hurry his pupils too much. Pupils should thus be taught how to use the dictionary, and be encouraged to consult it whenever in doubt as to the pronunciation of a word.

30. **Drill on the Elementary Sounds.**—Pupils learn at a very early age the elementary sounds of the language. The teacher should give frequent drills on these sounds, both singly and in connection with words. It is probably best to give a drill on the words first, and then have pupils articulate the sounds irrespective of the words.

These drills may be made useful also in giving training in pitch, by having pupils first give the pitch in such a tone as the teacher may request, then in a higher or a lower tone, changing from one pitch to another. The drills may be made useful also in teaching force, movement, etc.

A drill on the elementary sounds should usually be

in concert. It will have a tendency to encourage the timid, and at the same time train all to act and speak in harmony. The chief benefits of the drills are that they give flexibility to the voice and train the pupils to distinct and correct articulation.

31. **Division of Lessons.**—Do not make the mistake of supposing that because a lesson covers a certain number of paragraphs or pages you must assign all of it for a single lesson. Use your judgment. Assign such quantity as pupils can prepare thoroughly. A few lines or a single paragraph well prepared and well read is more beneficial than as many pages taught imperfectly or glanced over hastily. Every teacher must determine for himself how much his pupils can do well and profitably.

32. **Too Much Drill.**—Nothing tends to discourage pupils more than a constant drill on the same lesson. Give your pupils variety. Rather let them read a lesson but moderately well, and give them some supplementary reading, than keep them drilling on a lesson until they tire of it. Many teachers in their anxiety to secure thoroughness fall into this error, and nauseate their pupils with constant and senseless repetition. The child, like the man, delights in acquiring new ideas, in fighting new battles, and in testing its strength in overcoming new difficulties.

33. **Right Habits in Reading.**—The most valuable teaching of reading is that which secures correct habits. The children must in the reading-class be required to speak and read correctly, but it is equally important that they speak or read correctly in all other classes, even in the giving of a definition in geography, the spelling of a

word, or the repetition of the multiplication table. Right habits of this kind formed will make children good readers permanently.

34. The Eye should Anticipate the Voice.—Those whose reading has the best effect on an audience are they who are able to look the hearers in the eye at least a part of the time. To be able to do this, the reader must be trained to look ahead, taking in not only a few advance words, but sometimes a whole sentence at a glance. Only long and patient training will enable a reader to become thus proficient, and the training cannot begin too early.

35. Reading Aloud at Home.—As a step toward securing intelligible reading, and as a help in creating a taste for fireside reading, children should be encouraged to read aloud at home frequently, even though their reading be but imperfect. It will do them great good, and be an incentive to improvement.

36. Concert Reading.—Concert reading should be indulged in cautiously and only to a limited extent. It is claimed for concert reading that it is beneficial—

1. In bringing out the voices of the timid;
2. In checking the speed of those who read too rapidly;
3. In quickening the speed of those who read too slowly;
4. In waking up the class;
5. As an exercise in articulation and pronunciation.

There are, however, serious objections to frequent concert reading, one of the most important of which is that the weak learn to depend upon the strong, and in the exercise they merely pronounce the words, feeling that in the confusion of tones they will not be detected.

Concert reading is likely also to destroy natural expression.

If concert reading be indulged in, it will be profitable to have the class read in sections. The class may be divided into two sections, one of which shall read against the other, thus holding out to each section an incentive to do well and excel the other. The class may also be divided into a larger number of sections, each of which may read in turn, the teacher acting as judge to decide upon the merits of the reading of the respective sections.

37. **Reproduction on Slate.**—An exercise of great value is that of the teacher's selecting some interesting story or description and having the pupils listen to him while he reads it to them, they to reproduce it afterward on their slates or on paper. The exercise gives valuable culture to the power of attention, and the subsequent writing of it is an excellent language-lesson.

38. **Holding the Attention.**—If the class seem inclined to be inattentive, an exercise somewhat as follows may be given: Begin with a pupil, and let him read until the name of some other pupil is called. Suddenly call upon another, who takes up the sentence or the paragraph precisely where it was dropped by his predecessor and proceeds to read until he in turn is interrupted by the teacher's calling upon another. Should any of those called upon be not ready to proceed, the teacher should lose no time, but call at once upon some one else, and thus keep close attention and constant interest.

39. **Reading Paragraphs.**—In reading paragraphs the exercise may be varied by having several pupils in succession read the same paragraph, each giving expression

to the sentiment of the paragraph according to his own mental apprehension of it, and then again having each of the pupils read a different paragraph. This will give variety to the reading-exercise and add to the interest of the recitation.

40. **Inaccuracies to be Corrected.**—The teacher should give careful attention to the pupil's speech at all times, and by an occasional hint or suggestion set him aright where his pronunciation is incorrect or his articulation faulty. It is not enough to correct the words as mispronounced in the reading-class. Many more words are likely to be mispronounced in conversation or in the recitations in other branches. It would not be wise, of course, for the teacher to break into a conversation in order to make a correction. There are many other times and occasions when he may reach the error and correct it without necessarily wounding the child's feelings. Thus, a list of mispronounced words heard during the day may be placed on the blackboard, and the attention of the whole class be directed to them for a few moments, and the necessary corrections be made.

41. **Local Errors.**—There are probably few communities where some provincialisms do not mar the elegance and beauty of oral speech. It may be the sound of *w* for *v*, or *ch* for *j*, or *j* for *ch;* or the dropping of the *r* in *horse*, or the addition of *r* in *idea*, or the dropping of *h* in *heat*, or the adding of the *h* to such words as *in* or *on*, or the pronunciation of *to* as if spelled *tow*, or the pronunciation of such words as *calf* with the short sound of *a*, or other equally flagrant errors.

What shall the teacher do? In general, he should try to make his own speech conform to the best standards,

and as far as possible train his pupils to imitate him; and yet he should not be over-nice in his distinctness of articulation or over-rigid in insisting upon the pupils' giving the exact vowel-sounds where custom differs so widely among educated and cultured scholars as it does on the sound of *a* as found in the words *ask*, *glass*, and similar words.

42. Defining Phrases.—It frequently occurs that definitions to single words will give the learner no adequate idea of the meaning of the sentence. Indeed, where figurative language is extensively used the children should be questioned on the expressions as wholes rather than on the individual words. Thus, in the Persian fable, where a rat living near a bin of wheat gnaws through, and the poet thus expresses the result,

> "When on him rained a golden shower,
> And he became a rat of power,"

the questions should not be, What is the meaning of *rained?* Of *golden?* Of *shower?* for this will not express the meaning, but, What does the poet mean by saying, "On him rained a golden shower"? This plan of questioning will cultivate thought, and pupils will learn to appreciate the beauties of figurative language as well as the directness of plain statement.

43. Phonic Drills.—When pupils have once learned the table of elementary sounds, it will be found a valuable exercise to give them an occasional drill on the various combinations of sounds, particularly the consonant combinations, both in connection with words and separately. This will tend to make the vocal organs flexible and place them under complete control of the

speaker. With the younger pupils it is better to give the first drills in connection with words, both for the reason that they are easier to give in this way, and because the lesson may be made more interesting.

44. **Open the Mouth.**—Pupils should be trained to open the mouth when reading. By this it is not meant that the lips should be placed wide apart, but rather that the jaws should be separated, so as to let the sound flow freely and without interruption by the teeth. This result may be secured by frequent and continued drills on words containing the sounds of *a* as in *arm* and *all*.

45. **Over-distinct Articulation.**—Do not let your pupils form the habit of giving an over-nice and over-distinct pronunciation, as *gos'pel'*, *'pu'pil'*, etc., throwing almost as much force on the second syllable as on the first. So also we should avoid the opposite extremes of pronouncing "the book," *thē book* and *thŭ book;* rather subdue the *e*-sound and call it *th' book;* thus also *a-man'*, *a-cart'*, throwing the force on the important word.

46. **Substituting Synonyms.**—The substitution of synonyms is a most valuable exercise, not only in giving the child a vocabulary, but also in training him to distinguish the sense of what he reads. It consists in having the pupil substitute a word of similar signification for some word in a sentence selected by the teacher, in such a way that the sense of the sentence may not be destroyed. Pupils will take great interest in the exercise, and it will prove valuable in developing thought.

47. **The Teacher must be Interested.**—This is one of the chief essentials to success, not only in teaching reading, but also in teaching all other branches. The teacher

who feels an interest in his primary classes, and who will teach correct reading from the beginning on, will always succeed in making good natural readers, which are invariably the best.

48. Preparation of the Lesson.—It is not only necessary that the pupil give the lesson previous study; this study must be intelligent study, and in order to make it such the teacher has certain work to do. He should prepare every lesson carefully before assigning it, that he may know definitely just what work, and how much, he is asking his pupils to perform.

It is a good plan for him to read the lesson aloud, or at least some of the most difficult parts of it, when he assigns it, calling the attention of the pupils to the new or difficult words, explaining literary allusions, referring the pupils to certain biographical or historical works to enable them to explain such reference as is made to characters in biography or history, and see that they get the general thought of the author and the aim of the piece. All this will prepare them to study the selection intelligently and with interest.

When the class is called for recitation the teacher should satisfy himself that all have studied the lesson, and to do this he may pursue a plan somewhat as follows:

1. Question some as to the subject-matter of the lesson and the aim of the piece to be read.

2. Question others as to what places, persons, or objects are named in the piece.

3. Question also as to the leading thoughts or incidents mentioned in the piece, the pupils of course being permitted to express themselves in their own language.

4. Question as to the pronunciation and meaning of any new or unfamiliar words found in the selection.

5. Question on such biographical or historical allusions as were referred to during the preceding lesson-period.

This plan is simply suggestive, of course, and the teacher should not attempt to follow it every day, for it will consume much time if both teacher and pupils become interested in the lesson.

III. The Vocal Element in Reading.

It is not the purpose of this book to discuss in full the methods of the elocutionist; his work is that of a specialist. The intention of the author is to give simply a few general directions for the teaching of the chief vocal elements, *Quality, Emphasis, Force, Pitch, Inflection,* and *Rate,* believing that these are the essentials, and that a fuller discussion, while it might interest the few, would simply tend to confuse the many.

Quality.

Quality of voice has reference to the kind of tone used in speaking and reading. Different sentiments may be expressed by different tones. Indeed, the tone sometimes conveys the sentiment much more readily than do the words. Thus, a pleasant voice, rich in tone, will often control an audience more effectively and make time pass more pleasantly, though the sentiments uttered be of but ordinary interest, than greater wisdom conveyed through the means of a voice harsh and untrained.

The three chief tones in which nearly all sentiments are expressed are named as follows: *Pure, Orotund,* and

Aspirated. To these may be added a number of others, as the *Whispered,* consisting of breath only; the *Guttural,* which is a deep throat-tone; the *Tremor,* which is a tremulous movement of the voice; and still others; but for general reading the first three named are sufficient.

Pure Tone is smooth and clear. It is used in ordinary conversation, and is the expression of that which is *joyous, light,* or *agreeable.* It is used also to express *sadness.*

The *Orotund* is the same as Pure Tone, but magnified and intensified. It is used in expressing that which is descriptive of *grandeur, sublimity, awe, solemnity,* or *reverence.*

The *Aspirated Tone* is tone combined with breath forcibly expelled. It may be called a half whisper. Aspirated Tone is used to express *secrecy, fear, wonder, terror,* or *horror.*

In teaching reading the character of the sentiment to be expressed must determine the tone or quality of voice in which the piece is to be read. Pupils must be trained to adapt the tone to the sentiment. They should be exercised on the various qualities of voice, the teacher selecting at first such pieces as require only pure conversational tones, and requesting the pupils to express them naturally, as they would in ordinary conversation. Similar exercises should be given to develop the other qualities of voice named, and the pupils be trained at length to read well in any tone required.

A valuable exercise is that of having them examine various selections from time to time, and tell in what tone each should be read, thus adapting the tone to the character of the selection.

Emphasis.

Emphasis is a stress of voice placed on one or more words of a sentence.

The important words of a sentence, together with those which introduce new ideas, are those which usually receive the emphasis. Emphasis serves to point out the meaning of a speaker, and puts his audience in sympathy with his thoughts.

The chief kinds of emphasis are *absolute*, *antithetic*, and *cumulative*.

Absolute Emphasis is that which is applied to the prominent ideas to be expressed, without reference to other ideas.

Antithetic Emphasis is that which is used in expressing contrasted ideas, as in the following:

He liveth long who liveth well.

A cottage flower gives honey to the bee—a king's garden none to the butterfly.

Cumulative Emphasis is that which is applied to a succession of emphatic words in which the last receives more emphasis than its predecessor, as in the expressions—

To arms! TO ARMS! ye brave.

Boat ahoy! BOAT AHOY!!

Usually, the words which modify the subject or the predicate of a sentence are emphasized. Thus, in the sentence, "The meanest man is not without friends," the word *meanest*, which modifies the subject *man*, receives more emphasis than the word which it modifies. So also in the sentence, "The horse ran rapidly across the pasture," the word *rapidly* and the phrase *across the*

pasture, both of which modify the predicate *ran*, receive more emphasis than the predicate itself.

When the modifiers are themselves modified, their modifiers are usually emphasized. Thus, in the sentence, "The little boy learns very rapidly," the word *rapidly* is emphasized as a modifier of the predicate, but the word *very*, which modifies the modifier *rapidly*, and intensifies it, receives still more emphasis.

The exceptions to the foregoing principle are found when special ideas are to be expressed, as where we would desire to place the word *rapidly* in contrast with the word *slowly*, and thus emphasize by the rule of Antithetic Emphasis.

An excellent exercise in the teaching of emphasis is that of having pupils point out the emphatic words in such sentences as they understand fully. Sentence-building also gives them excellent training. Thus, let the teacher name a short sentence, as "The dog eats," and then let the pupils build to the subject as follows: The black dog eats; The little dog eats; The spotted dog eats, etc. The pupils will naturally emphasize the adjective modifiers. Now change the exercise, and let them build to the predicate; thus, The dog eats meat; The dog eats bread; The dog eats greedily; The dog eats in the kitchen, etc., and they will emphasize the modifiers of the predicate.

In Antithetic Emphasis give a number of sentences, and let the pupils first select the words in antithesis, and then read, giving these antithetic words the emphasis.

Force.

Force is the volume or degree of loudness used in reading a selection. By some it is claimed that empha-

sis is but a special kind of force; but if this were true, accent would necessarily be a special kind of emphasis or also a special kind of force. Force has reference to the general degree of loudness used in the reading of a piece.

The three chief degrees of force used in reading are known as *moderate*, *loud*, and *gentle*.

Whatever may be the character of the piece to be read, the force should be of sufficient loudness to make the reader clearly understood by all his audience.

Moderate Force is that used in ordinary conversation and in the reading of such *narrative*, *descriptive*, and other pieces as are not specially animated.

Loud Force is used in reading selections of a *declamatory* character; also those expressing sentiments of a *joyous* or *animated* nature.

Gentle Force is that which is used to express sentiments of a *gentle*, *tender*, *subdued*, or *solemn* nature.

In teaching force nothing is more valuable than having pupils put in practice the principle heretofore suggested—that whatever the character of the piece, the first point of importance is to read so loud that the reader may be clearly understood by his audience.

The first exercises in teaching force should be on narrative or descriptive pieces, such as require a moderate degree of force, and in which the pupil finds himself telling of some scene or event in the language of another and in a natural tone of voice. As a variation of this plan the pupil may have an exercise in articulating the elementary sounds, particularly the vocal sounds, then in repeating a few sentences.

Similar exercises may be conducted to give practice in

Loud Force and in Gentle Force. A valuable exercise consists in repeating the elementary sounds first with Moderate Force, then with Loud Force, and again with Gentle Force.

After these exercises a number of sentences should be assigned by dictation, which the pupil should examine, and at the following recitation he should be able not only to tell the degree of force with which they should be read, but also be able to read them. Lessons should also be analyzed, and the pupil be trained to judge and name the force with which each sentence should be read.

Pitch.

Pitch in reading denotes the general tone of voice in which the sentence, paragraph, or selection is read.

When the voice rises or falls from the general or prevailing pitch, it does so by inflections.

The *Keynote* is the standard pitch or tone which characterizes the reading of any selection. It is sometimes called also the *Standard Pitch.*

The three most important grades of pitch are termed *Middle Pitch*, *High Pitch*, and *Low Pitch.* These are, however, merely relative grades: that is, there is no definite note of the musical scale fixed for any one of these degrees. Different voices differ naturally in pitch; thus, what is Middle Pitch in one is possibly High Pitch or Low Pitch in another.

In general, the pitch of men's voices is an octave lower than that of women's voices, but there is also a very great difference in the voices of either sex. Thus women's voices are usually classed as *soprano* (high pitch), *alto* (low pitch), and *contralto* (medium pitch)

Men's voices are classed as *tenor* (high pitch), *bass* (low pitch), and *baritone* (medium pitch).

Middle Pitch is that employed in common conversation or in reading that which is *unemotional.*

High Pitch is that which rises above the ordinary speaking tone; it is used to express that which is *joyous* or *elevated*, also sentiments which are *subdued, sorrowful*, or *pathetic.* It is used also when *fear, hate*, or *anger* is represented.

Low Pitch is that which falls below the ordinary speaking tone; it is used to express sentiments which are *grave* or *solemn.*

One of the first exercises in teaching pitch is to drill pupils on the musical scale until all can give it accurately.

The pupils may be required to repeat together the elementary vowel-sounds on a pitch indicated by the teacher, and then either ascend or descend from one degree of pitch to another as the teacher may indicate, in such a manner as to give variety of pitch and impart readiness and ability to strike the required pitch promptly and accurately. Short sentences may be used for the same purpose as the elementary sounds in an exercise of this kind.

The definitions of the various degrees of pitch will enable either teacher or pupil, if the latter be an intelligent reader, to adapt the pitch to the sentiment of the piece to be read.

The chief errors to be corrected in connection with the teaching of pitch are the following:

1. Pupils and speakers before an audience are apt to pitch the voice in too high a key, under the impression

that the higher the key the more distinctly they will be heard. The same difficulty occurs where pupils recite or declaim. The error is best corrected by having the pupil recite to a single individual or two, that he may acquire a natural mode of expression and speak in natural tones. It is best, therefore, that such pieces as are adapted to Middle Pitch be selected first.

2. Pupils do not always distinguish between pitch and force. Pitch, it must be remembered, has nothing to do with the loudness or softness of one's reading, but is entirely dependent on the relative tone of the musical scale. Should pupils fail to make the proper distinction, the teacher should illustrate, and join with them in their reading until they fully understand the difference.

Pupils sometimes fail to adapt the pitch to the sentiment. Much of public reading, particularly from the pulpit, is open to criticism in this respect—that there is but little variation in the pitch of voice so as to make it harmonize with the sentiment to be read.

Inflections.

Inflections are slides of the voice either upward or downward. Reading without inflections produces monotone, which is never heard in natural conversation. We naturally begin in one tone, and end a word in either a higher or a lower key. We hardly speak even two successive syllables in the same key. What we do thus naturally in conversation we should do also in our reading, in order to make it pleasant and musical.

The upward slide of the voice is known as the *Rising Inflection*, and the downward slide as the *Falling Inflec-*

tion; all other inflections are but combinations of the rising and the falling.

The Rising Inflection is usually indicated by the following character (′), called the *acute* accent, and the falling by the following (‵), called the *grave* accent.

In order that the pupil may give proper inflection, he must first study thoroughly and faithfully the selection to be read, until he fully understands the meaning of every part of it. When once he fully understands the selection, if he has been trained to read naturally, so as to convey the meaning to others, he will need no rules to direct him. The inflections, like the emphasis, will usually be correct.

Exercises may be given on inflection by using some of the vocal elements in connection with the diatonic or musical scale. Thus, pupils may give the long sound of *a* or any other of the vowel-sounds on the keynote, and then slide to the next tone above or below, called the second; or the voice may be trained to slide two tones, or three, or even a full octave. This will give flexibility to the voice, but the matter of adapting the slide to the various sentiments is the special work of the elocutionist, and probably beyond the limited knowledge of the child-reader.

Rate.

Rate is the degree of rapidity with which the voice moves in reading.

Rate may be either *moderate, rapid,* or *slow.*

Moderate Rate is that used in ordinary *narration* or *description.*

Rapid Rate is used to express sentiments of *joy, gayety, mirth, anger,* or *fear.*

Slow Rate is used to express that which is *noble, dignified,* or *grand;* also, that which is *solemn, subdued, pathetic,* or *grave.*

The character of the piece to be read will determine what rate should be used. In general, however, the rate should never be so slow as to be sluggish, nor should it be so rapid as to make the reading indistinct; both are serious errors. Both faults may to some extent be corrected by exercises in concert reading, though this exercise, as has been suggested, should be indulged in cautiously and to a very limited extent.

The student should exercise great care that the words do not follow one another in too rapid succession. Let each word be fully uttered before articulating any part of its successor, otherwise there will be a clipping of syllables which will greatly mar the beauty of reading.

Care must be taken in rapid reading that the voice do not rise above the natural pitch. The pupil should be trained to read a sentence first slowly, then increase the rate gradually until he can read it with no greater rapidity without becoming indistinct in his utterance. The teacher must be careful never to force a pupil in reading beyond the limit of distinctness in articulation.

The usual error of pupils is that of reading all pieces with nearly the same rate. Some are naturally more rapid in speech than others, as their temperament may be more nervous, and therefore they will read more rapidly. These, as well as they who read too slowly because of natural temperament, need the example and the encouragement of the teacher to train them to a proper rate of utterance.

Pupils whose rate is too rapid should be led to dwell

longer on the vowel-sounds, while those whose rate is too slow should be trained to speak their words more quickly by dwelling a shorter time on the vowel-sounds. They may also be required to read selections of an animated nature.

Pauses.

Pauses are intervals or cessations of the voice between words, sentences, etc.

The two chief kinds of pauses are known as *Grammatical Pauses* and *Rhetorical Pauses.*

Grammatical Pauses are those which indicate the grammatical divisions of discourse. They are indicated usually by marks of punctuation.

Rhetorical Pauses are those which are used for the purpose of indicating the sentiment of a discourse. They are determined wholly by the sense to be expressed and by the good judgment of the reader. These pauses are necessary to the reader to enable him to express himself forcibly and gracefully, and to enable him to rest his voice and to breathe, so that his utterance may be easy and natural.

They are necessary to the hearer in order that he may have time to grasp each thought expressed, fully comprehend it, and see its relation to that which has gone before. They also rest the mind of the listener, and enable him to receive a deeper impression of the sentiment expressed.

Teachers should be careful that pupils do not acquire the notion that marks of punctuation indicate rhetorical pauses. A semicolon may sometimes require a greater cessation of voice than a period. Indeed, sometimes the very absence of a punctuation-mark may indicate a

greater pause of voice than the presence of one of these grammatical characters.

Train pupils to understand that the sentiment to be expressed determines the length of pause to be used, and that in general the greater the emphasis and the more important and impressive the sentiment, the longer should be the pause. The comparative length of pauses agrees with the rate employed, and therefore what might be considered a long pause in Rapid Rate would be but a short pause in Slow Rate.

A proper use of pauses may be taught by having pupils read naturally, as suggested in connection with Primary Reading; also, by having them first divide the sentences to be read into phrases, and read these naturally.

General Suggestions on Teaching Reading.

1. Previous Study.—The pupil should not be asked to read a selection which is beyond his capacity to appreciate and understand fully. The difficulty of the piece should be adapted to the ability of the child, and then he should be required to give it careful study, that he may be able to read it impressively.

2. Create a Taste for Reading.—A taste for good reading will last through life. How much good might be accomplished if we could create a desire on the part of our pupils to read good books for the sake of the information they contain or the pleasure they may give! It would rob the school-methods of teaching reading of half the difficulties with which they are attended, and produce most excellent results.

3. A Period for Reading.—Much might be done in the way of creating a taste for reading by setting apart a spe-

cial time each day for the pupils to enjoy themselves in the reading of such books or papers as are likely to interest them or convey information. The plan might be varied by the teacher's reading to them occasionally a short story or an interesting description.

4. Newspapers in Class.—But few if any series of Readers furnish all the exercise a child should have. Anything, therefore, will prove valuable which will create in the child a taste and desire to read for the sake of reading. In this direction children's magazines, story-books written in such language as the child understands, but not necessarily in monosyllables, or children's newspapers, will prove specially valuable. Care must be taken, however, that the newspapers be such as are not given to dealing in slander and slang. These are liable to do more mischief than good.

As a special feature, the children may be permitted to bring newspapers into class, and each read his own selections in such a way as to interest the other members of the class. If he can do this, he will be able to show that he is on the right road, and the difficulties of learning to read will vanish one by one.

5. Original Selections.—The teacher will find it a good plan in all grades of classes to allow his pupils occasionally to make their own selections to be read in class. He should have these submitted to him, however, before the pupil is permitted to read publicly, for now and then such selections will be chosen by thoughtless pupils as would be inappropriate or such as are beyond the ability of the child to read properly.

6. Scrap Lessons.—Much interest may be created by the teacher's selecting some suitable story or description

from a newspaper and cutting it into short paragraphs, and pasting these on bits of cardboard. These may then be numbered and handed to the pupils promiscuously, who read in turn as the respective numbers on the cards are called. In order to insure close attention let the whole class be required to reproduce the selection at a subsequent recitation, each in his own language. It affords excellent practice in reading, while it also secures attention and gives a valuable lesson in language and composition.

7. **Reading-Matches.**—These, like all other contests, if judiciously conducted, serve to create considerable interest, but there is great danger of their being of too frequent occurrence. Care must be exercised by the teacher that no ill feelings arise between the contestants. In these matches each pupil may read until he is called to his seat by some member of the opposite section for a mistake made, should that occur before he finishes his assigned portion of the lesson.

8. **Description and Narration.**—The earliest lessons in reading should be mainly narration and description. Pupils like to read stories first, and therefore narratives are most likely to interest them; next to these are vivid descriptions such as they can understand. Children should not be promoted too rapidly from Reader to Reader, but rather be given such supplementary reading as is to be found in the best children's magazines and papers.

9. **Analysis of the Lesson.**—As has been intimated, the teacher should read the lesson to his pupils a day in advance, in order that they may know how to study it. He should do more than this: he should read it with his pupils, calling attention to the difficult or unusual words, explaining the historical, biographical, and

scientific allusions in the lesson, and thus train his pupils to study the lesson understandingly and at the same time critically.

10. **Reading from the Platform.**—The teacher should now and then call individual pupils to read from the platform. In such cases those who remain at their seats may close their books for the time, and then make criticisms not only on the manner of reading, but also on the position, the tone, etc. The exercise will train every pupil in time to have confidence in himself and in his ability to stand up before an audience and express himself. The speakers who on the first trial can stand before an audience and express themselves in fluent and forcible speech, without clinging to a table or even to the buttons on their coats, are few indeed. Reading from the platform will help to overcome this stage-fear, at least to some extent, and give pupils confidence enough in themselves to permit them at least to read, if not speak, before an audience.

11. **Committing to Memory.**—When selections are memorized they should be short, and only such as contain valuable sentiments clothed in the best language. Committing to memory senseless rhymes which will not be forgotten when we want to rid ourselves of them is not only useless, but also mischievous.

12. **Breathing Exercises.**—These are important as an aid in securing correct posture and a free use of the vocal organs. They must, however, be indulged in cautiously, for when improperly conducted they are very exhausting, and they are liable to weary and tire unnecessarily.

In reading, pupils should be trained to take breath

before they feel the necessity for it and before the lungs experience any fatigue. The lungs should not only be well filled with air before the pupil begins to read, but should also be kept well filled, that unnecessary fatigue may be avoided.

An occasional exercise by the whole class or by the whole school in deep, full breathing will be found beneficial. The breath should be taken in slowly and expelled slowly through the nostrils in the gentler exercises, the windows being kept open for the time being, that the air may be fresh and pure.

13. Vocal Expression.—In teaching vocal expression the teacher should not rest satisfied with having his pupils imitate him. He ought to train them to examine the selection to be read, and decide upon the expression to be used with reference to force, rate, pitch, and the other vocal elements.

Errors to be Avoided.

There are certain errors to be avoided in teaching reading, most of which concern both primary and advanced reading. The teacher should exercise great vigilance, that these errors may be corrected when the child first learns to read. Among the chief of these errors are the following:

1. Too Rapid Reading.—It is the fault of many pupils that they read too rapidly. This may be corrected partly by having the class read now and then in concert; also, by leading them to dwell a longer time on the vocal sounds. The fault may be corrected partially by the teacher's reading with the pupils.

Pupils should be made to adapt the rate to the senti-

ment of the piece to be read. It is an effective but a severe plan to stop a pupil in the midst of his reading, and have him start afresh until his rate is not too rapid.

2. **Too Slow Reading.**—A very few pupils fall into the habit of reading too slowly. It is a difficulty hard to overcome. It is often a lazy habit, and as such it is constitutional. The only cure for it seems to be that of having the pupil read for a time only such selections as are lively and interesting, with now and then a concert exercise in connection with the more lively pupils.

3. **Failure to Adapt the Rate to the Sentiment.**—This is a common error, pupils often reading the grave with the same animation and rapidity as the gay. It arises from the failure of the pupil to understand, appreciate, and feel the sentiment of the piece. If the child be taught to read understandingly, little trouble will be experienced. Practice on the various styles of composition will in time correct the error.

4. **Monotonous Reading.**—This fault arises mainly from the fact that the child makes no distinction between pronunciation and reading. The error must be corrected in the very beginning if the teacher hopes to avoid it in the future, and no labor ought to be considered too great to start the pupils aright.

5. **Reading Too Loud.**—This is an error of which boys are guilty much more frequently than girls. One of the best methods of correcting the error is for the teacher to take some simple piece which ought to be read in an easy, conversational tone, and then proceed to show, before the class begins the recitation, how ridiculous the reading may be made by uttering it with much greater force than is required by the sentiment of the piece.

The pupils will catch the hint, and there are few who will not make efforts to avoid such incorrect reading.

6. Reading Too Low.—This error is usually committed by girls, though it is a fault which sometimes characterizes the reading of bashful boys also. The fault may be the result of timidity or bashfulness on the part of the pupil, or it may be the result of a weak voice. In either case the correction should be made according to the nature of the cause.

In the case of a weak voice the teacher must assign such exercises as will give strength to the vocal organs. This is, however, rarely the true cause of low reading; it is usually the result of timidity, and the only cure is that of training the child to have more confidence. Concert exercises are useful in this direction. The teacher may correct the fault in time by taking a position at some distance from the pupil and asking the latter to read so that the teacher may hear. The plan of sending the pupil to a distance from the teacher is not a good one, as it attracts the attention of the class to the unfortunate pupil, and makes her embarrassment all the greater. Indeed, when the teacher proceeds to take his position at a distance from the child, it should be done in such way as not to attract attention, and the distance should be increased so gradually that the child may not be permitted to suspect the object the teacher has in view.

It has been suggested that affectation is a cause of low reading. This is very rarely the case. Sensible pupils are never affected, and few teachers have a personal knowledge of any great number of pupils who read in this manner because of affectation. Should such, however, prove to be the cause, the plans already

suggested, together with a little judicious criticism, will correct the fault in good time.

7. **Drawling.**—This habit is the result of either laziness or ignorance. In the case of its arising from laziness, it may be corrected by giving the pupil something to read in which he is interested—some little story or anecdote. When the fault is the result of ignorance, it will usually be found that the pupil has fallen into the habit unconsciously or that he does not read understandingly. It is probable that in many cases where a pupil drawls he does not prepare his lesson with any other end in view than that of pronouncing the words, and he holds on to the last pronounced until he is sure of a footing on the next.

8. **False Reading of Poetry.**—Few can read poetry well. We need no better illustration of this than is afforded in the reading of hymns. Why any one in reading a hymn aloud should pause at the end of every line and utter the last line of the stanza so differently from the others, is something hard to answer. Indeed, it has no answer.

The chief faults in the reading of poetry are—

1. A monotonous drawl, with the measure made excessively and painfully distinct on every line of a stanza except the last, where the voice is suddenly permitted to slide into an unnatural cadence.

2. Too rapid utterance, so that the effect is lost on the hearer.

3. A mechanical observance of pauses without respect to the meaning to be expressed.

4. A chanting tone, producing on the hearer the effect of a mock solemnity.

5. A plain articulation, which, though it brings out

the meaning, does not show the beauty of movement and rhythm nor indicate the sentiment expressed by the language.

Poetry should be read naturally, and yet the movement should be such as to produce a pleasing effect on the mind of the hearer, with an exactness of time and accent that will indicate the meter without making it prominent.

9. Mannerisms.—It is one of the unfortunate features of the modern teaching of reading that pupils catch the mannerisms of their teachers. Instead of reading naturally, the impression seems to be that the reader or the so-called elocutionist must mouth and rant and dwell on the vocal sounds as if all of eloquence depended on the noise one can make. He who can make the most grimaces and perform the most dextrous feats of vocal gymnastics seems to catch the ears of the groundlings, but why he should be called a good reader no one seems to know.

Many of these mannerisms are simply ridiculous. One would think, from the dramatic effect which so many attempt to produce, that all life is a tragedy; but much of this style of reading is so comically defective as to result in a mere farce. Unfortunately, these mannerisms are all found in the high art of reading, and are in nearly all cases the copies of old masters, and there is but little hope of ever correcting them except by the merciless lash of criticism.

10. Unimpassioned Reading.—An equally serious fault is that of reading all literature as if emotion never entered into reading at all. It is not enough that we read understandingly and intelligibly: we must read impressively. We must so read that the emotions of the author may be expressed to others, and that their minds may be

affected by the beauty of the sentiment or the depth of feeling which stirs and controls our own.

Rules for Reading.

Of these it may be said that they have been productive of little good, particularly in the primary department, for the simple reason that they are in general beyond the comprehension of the pupil. Such rules as require specific pauses to be made according to the punctuation-marks in a sentence are incorrect in general, and therefore valueless. In order to apply the rule governing the reading of a piece—as, for instance, that we shall determine the standard of force by the general spirit of the piece—it requires a knowledge of grammatical construction, rhetorical expression, and good judgment in determining the general effect to be produced, which the ordinary child does not possess, and which many an elocutionist has longed for hopelessly.

The *Teacher of Reading* should be a thorough scholar. No one needs a broader knowledge of the wide field of literature than does the teacher. He should be well versed in biography, geography, and history, and thus be able to explain all historical or mythological allusions. The reading-class may be made the most interesting in the school, for here is afforded the best possible opportunity for literary culture. Here moral lessons may be given in such an effective way as is permitted in no other recitation. Here the pupil may be taught to appreciate not only beauty of expression, but also depth of sentiment, and the foundation be laid for subsequent culture of the most valuable and profitable kind.

CHAPTER II.

The Alphabet.

Whatever method of teaching reading may be pursued, a knowledge of the alphabet must necessarily be acquired by the child. It is impossible for it to remember any great number of word-forms. The written or printed characters which we call "the alphabet" are also the representatives of sounds, and a knowledge of them is necessary on this account. They are of course arbitrary forms, but, after all, it is much easier to teach these forms than it would be to teach all the words used by a child in its reading and in its conversation with its fellows.

The alphabet is a system of characters which are used to represent the elementary sounds of a language. The word is derived from the first two letters of the Greek alphabet, *alpha* and *beta*, though it comes to us from the Latin *alphabetum*.

The English alphabet consists of twenty-six letters. Nothing is definitely known as to the origin of these characters or their names. The English language received them from the Latin, but it is held by many that, after all, the characters are mere modifications of the Phœnician characters, and that the Phœnicians in turn borrowed them from the Egyptians. The characters themselves have not only been considerably modified, but there have also been a number of additions made.

In learning the English alphabet it is necessary that the child shall be able to distinguish the various forms, that it shall be able to name the letters, and that it shall be able to associate the name with the form. Whatever methods will secure these results most readily are the best.

I. Methods of Teaching the Alphabet.

The two chief plans or methods by which children may be taught the alphabet are the *A B C Method*, which begins by teaching the letters themselves, and the *Word Method*, which begins with words. The first proceeds from letters to words, the second from words to letters. Both methods have strong advocates among good teachers. All methods, by whatever name they may be known, are but modifications of these.

1. The A B C Method.

Formerly, this was the only method known, and it was a method almost without variation. Children came to the teacher's knee one at a time, and proceeded at the teacher's dictation to call the roll from *A* to *Z;* or, as B. F. Taylor graphically expresses it in his poem of *The Old School-house*, the boy stood with

> "Frightened hair all blown about,
> Buttered lips in half a pout,
> Knuckle boring out an eye,
> Saying 'P' and thinking 'pie;'
> Feeling for a speckled bean,
> 'Twixt each breath a dumb ravine;
> Like clock unwound, but going yet,
> He slowly ticks the alphabet:
> 'A-ah—B-ah—C-ah—D,'
> Finds the bean and calls for 'E!'"

The usual variation of this method was that of beginning at the other end of the line and calling the letters from *Z* to *A*, when the pupil retired to his seat to make room for some equally anxious learner. By this process the teacher was fortunate who succeeded in teaching the alphabet in a single winter term. Pupils learned the names long before they were able to associate them with the characters which they represented, and it was no uncommon sight to see the child repeating the letters in measured tone while it looked in an abstracted sort of way out of the window or kept watching the expression of the teacher's countenance.

By the A B C Method the alphabet may be taught from the blackboard, with cards, from a book, or with blocks.

The Blackboard Method.—In this method the teacher prints on the blackboard, for the first lesson, a few of the forms most readily remembered, such as *o*, *s*, *x*, etc. He then calls the attention of the learners to the peculiarities of these forms; and it will do no harm to have the children liken the forms to objects with which they are familiar, if this will tend to arouse interest in the work.

The pupils should then be required to draw the forms on the board, making them as neat as possible, and wherever errors are made the teacher should show the children how they may be corrected. After the pupils have returned to their seats they may be requested to copy the forms on their slates, and at the next recitation the teacher should review the letters previously taught and add one or two more.

As soon as possible the pupils may be taught that these

letters combined form words. Thus, when *o* and *x* have been taught, let the letters be printed together to form *ox;* and when a new letter is added, as *f,* let the pupil form the new word, *fox.* In a very few days the exercise will become interesting to him, and the matter of teaching the alphabet will be rendered very much easier.

The process may thus be continued until the pupil knows the whole alphabet, leaving for the last such letters as are similar in form, and therefore whose differences are not readily distinguished. The chief of these are the letters *n* and *u, b, d, p,* and *q,* all of which may be taught more readily by this method than by any other.

The Card Method.—This method does not differ materially from the Blackboard Method. The letters, instead of being printed on the board by the teacher, are already found on the card if properly constructed, and the pupil is taught as before to recognize a few of the simplest forms, also their names, and then associate the names with the forms.

The pupil should, as an interesting exercise, be permitted to search for such other forms on the card as he has already been taught. Thus, if he has been taught to recognize and name *o,* place the pointer in his hand and let him point to the letter, then to another *o,* then to another, and so on, until he recognizes the letter wherever he finds it. As a variation of the exercise, let several of the pupils pass to the card together, and, having placed a pointer in the hand of each, let them strive to excel one another in their efforts to find the letter named by the teacher. Pupils will become quite interested and excited in a contest of this kind, and under the care of a judicious teacher they will make rapid progress.

The Block Method.—By this method the pupils become acquainted with the letter-forms as they find them printed on blocks. It is an excellent means of making pupils acquainted with the alphabet at home, where the blocks may be used in the children's plays.

The blocks may also be divided into sections, and the pupils be permitted to exercise their ingenuity in combining these so as to form the letters correctly. This is particularly true of such letters as *b*, *p*, *q*, and *d*. The children in this way become acquainted with the forms as a part of their daily play, and it will be necessary to teach only the name of the form.

The Book Method.—This method proceeds, as in the Card Method, to teach a few letters at a time, but in connection with a book rather than from cards. The method does not differ materially from the Card Method.

The only advantage claimed for the method is that pupils have the book at their seats, and in this way they may examine the letters while not reciting, and copy them on their slates without constantly referring to the blackboard.

There is but little objection to the use of the book if it be taken in connection with the Card or the Blackboard Method, but if the book alone is to be depended upon, this method is the least valuable of all the A B C methods.

2. The Word Method.

The A B C Method of teaching the alphabet is essentially synthetic, while the Word Method is analytic. The latter begins with words as wholes, and resolves these into the letters of which they are composed.

The *plan* of the Word Method is as follows: An object, as a hat, is selected, and a lesson is given, as explained in the Object Method of teaching reading. After the child once recognizes the word-form, he is taught to pronounce the word in imitation of the teacher, then he names the letters of the word as the teacher pronounces them, and then names them without the teacher's assistance, and points to them as he names them, until finally he is able to point to the individual letters as called for promiscuously by the teacher.

A number of pictures which contain the principal letters of the alphabet may be presented, and from these may be taught first the names, and then the letters of which these names are composed. The following words, the names of objects, may be used in the manner indicated: cat, dog, fox, kite, cow, quill, man, boy, jug, hive, sheep, zebra.

After each of the letters has been taught by these picture word-lessons, a further series of lessons may be given on words, the names of objects, to the extent of sixty or more, until the pupil has learned to distinguish the letters readily at sight.

The plan suggested in the A B C Method, of having the pupils write the words on their slates, should of course be practiced in connection with the Word Method.

The chief advantages claimed for the Word Method of teaching the alphabet are—

1. *That it is Interesting.*—The word which it is desired to teach may be introduced by a short and interesting conversation with reference to the object which the word represents. Pupils will be eager to learn the word-forms

which represent the names of these objects, and equally anxious to learn the letters which compose these words.

2. *It is the Natural Method.*—In learning to talk the child first becomes acquainted with words. These he uses as he hears them used by others, and he learns to associate certain words with certain objects, actions, qualities, etc. The transition from spoken words to written words is both easy and natural, and this, therefore, seems to be the natural method of procedure in teaching.

3. *It Aids Pupils in Learning to Pronounce.*—This is particularly true when the picture can be used with the word. But, independent of the picture, the child learns to recognize words, to some extent at least, as he learns to recognize his playmates—not by analyzing them, but by their general form and appearance.

II. Suggestions on Teaching the Alphabet.

1. Teach the small letters first. The pupils usually learn the capitals readily while using the small letters in copying words and sentences.

2. Teach, as far as possible, the names and the sounds of letters at the same time.

3. Let the lessons in teaching the alphabet be short—not more than ten minutes at most for a single lesson.

4. Let the pupils who are learning the alphabet recite in classes. The competition is valuable.

5. The number in the alphabet-class should be limited to ten at most. A larger number are likely to be either listless or, if attentive, too boisterous.

6. Teach pupils to recognize words as wholes and call them at sight. This will aid them greatly in learning to read.

7. Combine all the methods in teaching the alphabet if you are able to create most interest in this way.

8. See that pupils in copying words use good-sized pencils, so that they may not contract such improper habits in the manner of holding the pen as may require years of training to correct.

9. Teach children the script letters as soon as possible, that they may write their lessons instead of printing them on their slates.

10. Put a book in the hands of a pupil occasionally, and let him select letters at the teacher's dictation.

11. Do not waste any time in attempting to teach a pupil all the letters of the alphabet before you permit him to read. Put him to reading at the earliest possible moment, in order that he may become interested and see for himself that he is making progress.

12. In teaching by the Word Method use first such forms as represent objects, and, if you are able to draw, make a picture on the board, and beneath this place the the name of the object.

13. Teach such letters as *p*, *b*, *q*, and *d*, also *c* and *e*, *u* and *n*, by showing to the pupils how these forms differ and in what respects they are similar.

14. If you can gather a sufficient number of blocks with letters pasted on them, let the pupils spell words by laying the blocks in proper order one after another.

15. Let pupils be taught the letters both promiscuously and in their proper order—the first, that they may distinguish them anywhere; the second, in order that they may be able to consult any book or index arranged alphabetically.

CHAPTER III.

Orthography.

Orthography (from the Greek *orthos*, right, and *graphein*, to write) means, literally, to write right. It thus represents a proper writing of the words of a language. It is in reality a representation of spoken language by written or printed characters, which had its origin in picture-writing or hieroglyphics. It may be stated here that some languages even yet—notably the Chinese—continue to employ picture characters rather than letters to express the words of the language. The characters in the English language are entirely arbitrary, having no connection with the names they bear or the sounds they are used to represent.

I. The Importance of Learning to Spell.

It is important to learn to spell well. Accurate scholarship and habits of close observation may in many cases be judged by one's spelling. To say that many thoroughly educated persons are poor spellers is neither a compliment to their scholarship nor is it a correct statement. The man whose close and critical observation trains him to distinguish differences in color, form, etc. is equally critical with reference to the spelling of the

words he writes, if his culture of perception, particularly as regards form, is worthy of the name. The man who accurately distinguishes form in crystals, flowers, petals, sepals, etc. ought to distinguish it in words, unless his culture is altogether one-sided.

It may be true that many over-estimate the importance of being able to spell well, but certainly there are few poor spellers whom we would be willing to accept as the representatives of thorough scholarship or as reliable authority on most other branches of study. As Dr. Currie has expressed it, "The possession procures no credit, but the want of it entails disgrace." That is, there may be many who make a hobby of spelling, while they know but little else, but there are few that spell poorly whose scholarship would be accepted as authority on other subjects.

It is frequently claimed that men a half century ago were much better spellers than are we of the present. In reply to this it might be said, They ought to have been, because then the school-course of study was very limited, consisting usually of spelling, reading, writing, and arithmetic only, and the number of words then used was also much smaller than at present. But the proof does not exist that our predecessors were better spellers on the average than the children of to-day. If a practical test were desired, it might be profitable to have a number of ladies and gentlemen, products of the public schools of but forty years ago, enter into a contest with a similar number of young men and women of to-day in a written exercise, the only true test. Alas! what might the result not be!

2. Difficulties in the Way of Teaching Orthography.

The difficulties in the way of teaching English orthography are greater than those encountered in teaching the orthography of any other language. These difficulties account for the fact that pupils in studying English do not make such rapid progress frequently as is made by pupils in studying French, German, and other languages. Indeed, orthography is one of the most difficult studies that the student of English is called upon to pursue, and the greater number of failures in this branch than in others in all competitive examinations is strong proof of the fact.

The principal difficulty encountered in learning the spelling of English lies in the fact that our language is a composite one, derived from almost every other spoken language. Words are introduced from the tongue of almost every nationality with which either England or America has had intercourse. Thus we have obtained *bouquet*, *château*, *dépôt* from the French; *coffee*, *cipher*, *assassin* from the Arabic; *embargo*, *coyote*, *caste* from the Spanish; *knave*, *waltz* from the German; *amen*, *cherub*, *seraph* from the Hebrew; *tobacco*, *opossum*, *moccasin* from the Indian; *sloop*, *schooner*, *boor* from the Dutch; and so on with a large part of what we now call English. The basis of our language is the Anglo-Saxon, to which have been added words largely taken from the Norman French, the Latin, the Greek, etc. Thus, in learning to spell modern English we necessarily learn to spell, to some extent at least, almost every language from which we have appropriated words.

Most of the irregularities of our language arise from

the composite character of English. Some arise from the use of silent letters, some from the fact that our language is not phonetic, and some from the fact that often a combination may be pronounced in various ways, as *au* in *gauge*, *maul*, etc.

There was a time in the history of English when all spelling seems to have been irregular. It is said, for instance, that the word *it* was spelled also *yt*, *ytt*, *hit*, *hitt*, *itt*, *hyt*, *hytt*. We have made much improvement on the condition of spelling at that time, and yet the number of words found in the standard dictionaries of to-day in which the spelling is various, as in *theatre*, *theater*, *defence*, *defense*, etc., is said to be about four thousand.

3. Methods of Recitation.

There are properly two methods of conducting a recitation in orthography—the *Oral* and the *Written*. These have been called methods of teaching, but improperly so. One depends on the sense of hearing, and the other on that of sight, to determine the proper form of the word.

1. The Oral Method.

The Oral Method is that in which the pupil names the letters orally in the order in which they are found in the word. In preparing the lesson the pupil memorizes the order in which the letters are placed, associating the sound to some extent with the letters themselves.

Advantages of the Oral Method.—The following are claimed as the chief advantages of the Oral Method:

1. Pupils are taught to pronounce words while learning to spell them.

2. They also acquire facility and readiness in the syllabication of words.

3. Time is sometimes saved by spelling orally.

Disadvantages of the Oral Method.—Among the chief disadvantages of the Oral Method of recitation are the following:

1. Pupils who spell well orally do not always spell correctly by the Written Method.

2. The principal value of spelling is its application in writing; this value is lost in oral spelling.

3. The number of words spelled by each pupil by the Oral Method is not so great as that by the Written Method.

The Oral Method is the one which has been pursued for centuries, and its chief merit lies in its age, though there are times when, for the sake of creating interest or variety in recitation, it may be well to conduct a recitation in orthography orally.

Variations of the Oral Method.

1. Position of Pupils.—The pupils having been called to class, they may be required either to sit or to stand. If what is usually known as the "trapping system" is pursued, where the post of honor is the head of the class, it is better to have the class stand, but always in as graceful a position as possible, and as nearly in a straight line as may be convenient. The teacher should then place himself in such a position that he may command the eye of every child in the class.

2. Assignment of Words.—The method of assignment

will depend somewhat on the system pursued. If the trapping system be not pursued, but little need be said as to the manner of assignment; but if the trapping system be used, then care must be taken that pupils do not anticipate the teacher's method of assignment. The methods of assignment are various; the following are the chief:

Promiscuous Assignment.—By the promiscuous method the teacher may begin the assignment of words at the foot of the first column and proceed upward; the next day, by beginning at the last column; then by passing across the page from side to side, then again by going diagonally across, then down the columns, then up and down alternately, varying the method nearly every day, so that the pupils may not anticipate the method of procedure and prepare themselves accordingly.

Pupils' Assignment.—Sometimes it will be profitable to permit such pupils as have held the post of honor the greatest number of times during the month to take the place of the teacher for a day or two in assigning words; this as a reward for good work. The teacher must of course hold himself in readiness to support the pupil so honored in case he get into difficulty.

3. Attention to Mistakes.—The method of spelling may be varied by the teacher's passing to the next word when one has been incorrectly spelled, requiring the pupils to notice and make all corrections; or he may pass the same word to the next pupil, showing thus that it was incorrectly spelled. By the former method the attention of the pupils is held more closely, as the one who detects the error and makes the correction first should be entitled to take the place of the one who

first missed the word, or the head of the class, if it passed by the head without being detected.

This method may be varied also by the teacher's assigning the same word several times in succession, though it may have been spelled correctly the first time. This plan not only keeps a class attentive, but it also makes each pupil decide according to his actual opinion.

Cautions on Oral Spelling.

1. *Do not give more than one trial in oral spelling.* All trials after the first are liable to be mere guesses.

2. *Do not pronounce the word more than once to the class.* It is the pupil's business to be attentive and hear the first time the word is pronounced. An exception should be made to this caution only when the pupil was prevented from hearing by some unavoidable noise.

3. *Do not mispronounce words to assist pupils in spelling them.* Pronounce each word as it would be pronounced in good reading or correct conversation. Do not say *an-ī-mate*, *sep-ā-rate*, etc. more distinctly than you would in reading these words.

4. *Do not permit pupils to use unnatural tones in spelling.* The tendency is to pitch the voice too high and spell too loud.

5. *Do not permit pupils to spell words in the order in which they have studied them.* The writer has seen pupils to the number of ten or more spell the words of the book without the teacher's doing more than saying to the pupil at the head of the class, "Mary, you may spell the first word;" and the teacher thought he was doing good work. When words are spelled in the order in which they are

found in the book, pupils are apt to commit to memory only such as they expect to spell.

6. *Have pupils pronounce before spelling a word.* This will show whether they know what the word is, and prevent the excuse so often given, that they did not understand the word.

7. *Require the pupil to pronounce each syllable correctly.* Thus, in the word *liniment* have him spell it *l i n* (*lĭn*) *i* (*ĭ*) *m e n t* (*mĕnt*), and then pronounce the word as a whole. As to whether he should go back each time and repronounce all the previously pronounced syllables in connection with the last one added, is a matter which has been much discussed on both sides. Some have claimed that to repronounce each time gives culture to the vocal powers, but it seems to be a good deal of work to secure a small result.

8. *Do not require pupils to commit to memory all the words of the lesson.* Select those that are most difficult and most likely to be misspelled.

9. *Have an occasional spelling-match* to keep up variety and interest, but be careful that pupils are not permitted to tease one another after the match has been concluded.

10. *Require pupils to spell phonically also.* This will train them to utter the elementary sounds correctly, and teach them to recognize what letters in a word are silent.

2. The Written Method.

The Written Method of recitation is that in which the pupil writes on slate, paper, or blackboard the letters of a word in their proper order. In preparing the lesson the pupil regards not so much the *sound* as

the *form* of the word. The sense of sight is depended upon as the main power by which the child acquires a knowledge of the word, and on this form as impressed on the mind he relies for his ability to reproduce the word with all its elements correctly arranged.

Advantages of the Written Method.—The chief advantages of the Written Method of recitation in spelling are the following:

1. We learn to spell more readily by sight than by sound. The form of the word-picture is more readily impressed upon the mind and more readily reproduced.
2. Pupils are required in their life-work to use spelling almost wholly by writing. They are rarely called upon to spell orally, but even the letters they write require them to reproduce words by writing, and not orally.
3. Pupils are enabled to spell a much greater number of words during a recitation than by the Oral Method.
4. All pupils are kept busily employed, and the attention of all is held by this method.
5. Pupils are enabled to examine the misspelled words, detect the errors, and make the proper correction.
6. Written spelling is a more accurate test of scholarship.

Disadvantages of the Written Method.—The only serious disadvantage of the Written Method of recitation is that more time is usually required to conduct a recitation; but even this objection may be shown to have no force when we take into consideration the fact that in oral spelling but few pupils receive any great number of words each. If the teacher were to select ten or fifteen of the most difficult words in the lesson, and require these to be

written, he would do much more good than by spelling a larger number orally, and be able to do the work in a shorter period of time.

Variations of the Written Method.

The recitation by the Written Method may be conducted on the blackboard or slates, or by the use of blank-books.

1. **The Blackboard Method.**—By this method the pupils are required to pass to the blackboard, and, after having erased any work remaining from a previous recitation, divide the space into sections by drawing vertical lines by which to separate their work from that of their neighbors.

In writing the words on the board the whole class may write each word as pronounced by the teacher, or the class may be divided into sections of twos or threes. The pupils, in case they are divided into sections of twos, may begin numbering at one end of the board, calling out alternately in order *one, two; one, two;* or if in sections of threes, calling their numbers, *one, two, three; one, two, three;* and so on. The teacher then pronounces a different word to each section alternately as rapidly as the pupils can place them on the board.

The Manner of Writing.—The words should be written in vertical columns rather than across the board. It is best also to begin each word with a small letter, unless the word is such as to demand a capital letter at all times; and it is well, if there be time, to have the pupils mark the correct accent of each word.

A variation of this exercise consists in using the diacritical signs and applying them in indicating the proper pronunciation of each word. The silent letters may have

a line drawn either under them or through them, as may be agreed upon.

Corrections.—After the words have been written the pupils may be requested to exchange places, and each review the work of another as the teacher proceeds to spell the words correctly.

The method may be varied by having each pupil correct his own mistakes as the teacher spells the words.

A second variation consists in having one of the pupils spell the words for his section from the work before him on the board, the teacher being careful to guard against permitting any errors to pass unnoticed.

The corrected words may be marked with a cross after them, or by drawing a line under them, or by placing a figure, 1, 2, etc., after each.

The Misspelled Words.—It is a good plan for both the teacher and the pupils to keep a list of the misspelled words, or at least those misspelled by the majority of the class. These may be made the subject of a review lesson, and those which are specially likely to be misspelled may be called up frequently until the pupils are no longer likely to misspell them.

The *advantage* of the Blackboard Method lies in the fact that the teacher can keep in sight all the work of the pupils, and when the class is divided into sections it is almost impossible for the pupils to copy from one another without detection.

The *objections* to the Blackboard Method are that in some schools there is not sufficient blackboard surface to accommodate a whole class at the board, and that there is greater opportunity to copy from one another than by other written methods.

2. **The Slate Method.**—In this method the pupils write their words on their slates, as described in the Blackboard Method. The pupils may be permitted to write at their desks, but it is better that they come forward to the recitation-benches and do the work there, as it prevents their copying from slips of paper or from their books.

Corrections.—At a signal given by the teacher the pupils may be required to exchange slates, passing them one day to the right one space, the next day to the left one space or to the right two spaces, and thus continually changing the order, that no two pupils may be tempted to make an agreement not to correct each other's words and thus deceive the teacher. It may be wise to have each pupil at times retain his own slate and correct his own errors, but only when the class is wholly trustworthy.

The chief *objections* to the Slate Method are, first, that the teacher has not the opportunity, or if the opportunity not the time, to examine the work on the slates; and, secondly, that pupils will sometimes prepare their lesson on the slate while at their seats, and then erase the words only partially, so that they may be enabled to copy them when they come to class. This difficulty may be avoided by the teacher's pronouncing the words promiscuously and not in the order of the book.

3. **The Blank-book Method.**—In this method blank-books prepared for the purpose are used. These are ruled with each word-space ready numbered, with additional space left below on which to write the misspelled words.

The *manner of writing* the words is the same as in the

Blackboard Method, with this difference—that if ink be used it will be better to have pupils remain at their desks while writing the exercise.

In *correcting* it is usually best, unless the class be very large, for the teacher to examine the words and mark each one that is incorrectly spelled; or the corrections may be made by the pupils themselves, as suggested in the other methods. The misspelled words should be written, correctly spelled, in the space below, and thus a permanent record will be kept which will enable the pupil to see what words he is most liable to misspell.

Any of the written methods are valuable, and, in general, they are preferable to the Oral Method of conducting a recitation in this branch, but the Oral Method will frequently be found valuable in giving variety to the school-work.

4. Preparation for the Recitation.

Whatever the method of recitation in orthography, the method of preparation for the recitation is the important work to be considered.

All lessons in orthography, particularly first lessons, should be arranged according to some analogy, in order that the pupil in preparing them may have the benefit of acquiring the form while he makes comparisons. This analogy may be an analogy of vowel-sound, as in *man*, *pan*, *ran*, etc., or it may be an analogy of terminations, as in *tenable*, *salable*, *arable*, etc., or it may be both, as in *arbor*, *harbor*, *parlor*, etc., *charger*, *larger*, *darker*, *farmer*, etc. In this way the work of teaching spelling may be greatly simplified.

Pupils, from the most primary to the most advanced,

should be required to prepare their lessons by writing them on their slates. Those who are not able to write may be permitted temporarily to print the words, but writing should be substituted for printing as soon as possible. This is the important part of the work in teaching spelling, for by this manner of preparation the form is impressed on the mind of the child, and he at the same time acquires valuable muscular training of the hand which will fit him for subsequent work in both writing and drawing.

5. General Suggestions on Teaching Spelling.

1. Combine Methods.—Teachers should make a judicious combination of the Oral and the Written Method of recitation in spelling. The Oral Method helps to secure correct pronunciation and awaken a lively interest, while the Written Method trains the eye to recognize the form of words, and is the more practical in its results.

2. Names of Objects.—Give pupils occasional exercise in spelling the names of objects with which they are familiar. These may be taken in classes or groups, as the names of domestic animals, the names of birds, the names of trees, the names of flowers; or they may be taken promiscuously, as the names of objects found in the parlor, seen on the way to school, or heard in passing along the street. The teacher should not, however, rely on this as a general exercise; nothing is so reliable for teaching correct word-forms as the plan of grouping according to some analogy of spelling or sound.

3. Geographical Names.—With the advanced classes it will be found a profitable exercise to spell both geograph-

ical and biographical names, as the capes of the United States, the names of American poets, English novelists, or American historians. The exercise may, with a little help from the teacher, be made suggestive and exceedingly interesting.

4. Spelling Sentences.—Vary the spelling exercise occasionally by dictating sentences, and require pupils to spell these. Vary the exercise by having pupils select such words as may be dictated by the teacher, and incorporate them in sentences of their own construction. Sentences may be read from newspapers or interesting books, and these be written down by the pupil. Due care should of course be exercised by the teacher that the pupils use capital letters and punctuation-marks correctly, so far as they have been taught.

5. Pre-pronunciation.—In assigning the work for the next day the teacher should pronounce the lesson for the pupils, that they may study the words understandingly. This exercise may be varied by having the pupils pronounce, while the teacher holds himself in readiness to correct any errors made The exercise may be varied also, particularly in primary classes, by the teacher's pronouncing the words and having the pupils imitate him.

6. Difficult Words.—The teacher should select such words as are often misspelled, and give pupils frequent exercises in spelling these. Too much of our teaching of spelling has been valueless because we have followed the textbook too closely in this as in other branches. Such words as *neither*, *piece*, *seize*, *leisure*, *many*, *very*, *great*, *forty*, *their*, *there*, *until*, *fulfill*, etc., among the words of every-day use, ought to receive close attention;

and thus also with words not so frequently used, such as *separate, beginning, director, absence, develop, judgment,* and many others.

7. Special Words.—In assigning a lesson the teacher should call attention to any special words that are likely to be misspelled or that present any special difficulty. Thus, he may call the attention of pupils to the fact that *preparation,* for instance, is derived from *prepare,* and is never, therefore, correctly spelled *prepēration,* as we so often find it. Thus, also he may show that the basis of *intention* is *intent,* while that of *intension* is *intense.* The writer succeeded in correcting the habit in a young man of spelling the word *preparation* with an *e* before the *r* by simply writing the word on a card and handing it to him, with the request that he would carry it in his vest-pocket for a little while. He has also frequently succeeded in correcting the habit of spelling *existence* with an *a* after the *t* by calling the attention of a class to the fact that of the two words *existence* and *resistance,* the former begins with *e* and ends with *ence,* while the latter does not begin with *e* and ends with *ance.*

8. Exchanging Slates.—A great advantage arises from having pupils exchange places at the blackboard or exchange slates in correcting work. It makes pupils critical to observe the mistakes of others, and thus at the same time aids their own spelling. Proof-readers, the best spellers in the world, gain their efficiency largely by this process of criticism.

9. Syllabication.—Exercises in dividing words into the syllables of which they are composed is valuable, not only in teaching pupils to divide words properly,

but also in training them to observe closely the relation of different parts of words.

10. Groups of Words.—Some teachers oppose the use of a spelling-book. In such cases the teacher must of course originate a substitute. In doing so he should group the words according to some analogy, and dictate them to pupils, so that they may be copied into blank-books for future use. There is, however, great waste of time in collecting words where no book is used, and still greater waste where words are grouped without system, and the pupil compelled to study and spell at random as the words may be called from reading-lessons. The fault lies not in the spelling-book, but rather in the fact that many who use it are deficient in their methods of teaching.

11. Phonic Spelling.—Pupils should be required to spell words both literally and phonically. A word is spelled literally by naming the letters of which it consists in their proper order, and phonically by giving the elementary sounds of which it consists in their proper order. For instance, *c a t* is the literal spelling of the word *cat*, while the phonic spelling of the same word would be properly represented by *k ă t*. To say that the former, *c a t*, spells *see eighty* is absurd. The mistake arises from either an ignorant or a perverse misunderstanding of the difference between literal and phonic spelling.

Pupils learn to distinguish the silent letters and the powers of the various letters much more readily by a combination of both literal and phonic spelling.

12. Orthography in all Branches.—One of the most effective methods of making good spellers is that of

keeping the attention of pupils directed to the form of words in all branches of study. Whenever a mistake in spelling is detected in the written work of the pupil, it matters not what the branch, it should be corrected at once. Occasional exercises should be given in connection with all branches in the correct spelling and the etymology of the various terms met with.

13. **Paragraph Spelling.**—It will be found a valuable exercise to read to pupils occasionally a whole paragraph, or even a story, with the purpose of having them copy as you read, and then exchange slates, and as the teacher spells the words mark the mistakes, as in the ordinary recitation.

14. **Committing all the Words.**—It is a great waste of time to require pupils to commit to memory and repeat all the words of a spelling-lesson, and it is a still greater waste of energy.

15. **Definitions.**—Let pupils occasionally explain the meaning of words. It is held by many progressive teachers that it is useless to learn the spelling of words which we do not understand. Do not, however, insist on formal definitions. If the pupil can substitute a word or a phrase which expresses the meaning equally well, accept it; and if he can incorporate the word in an original sentence in such a way as to express the correct meaning, it will be still better.

16. **Etymology.**—The spelling-lesson should be so conducted as to teach something of the origin and history of words. The pupil who is taught that *dahlia* is derived from the name of the botanist Dahl will rarely miss the spelling of that word; and, similarly, the pupils who are

taught that *camellia* is named after the Jesuit Camelli, who brought the flower from the East, will not fail to spell the word with two *l*'s, and give the *e* its proper short sound instead of the long one so generally heard in the pronunciation of this word. Thus also with many other words whose origin and history in themselves are the source of quite as valuable information as the formal spelling of the words.

Something may be done also in the work of forming the derivatives from roots when once the pupils understand the force of even a portion of the prefixes and suffixes which they use daily.

17. **Words for Composition.**—An exceedingly interesting exercise in spelling is that of taking some word, and from the letters of which it consists forming a number of other words, using no letter any more frequently than it occurs in the original word. Thus, from the word *Baltimore* the pupil may form *bat, balm, bate, bait, bale, bar, bare,* etc. to the number of more than two hundred words. It is well sometimes to give a short period of time, say five minutes, and have the whole class contest, and then either write their words on the board or those alone having the greatest number may write them on the board.

The exercise may be varied by having the class divided into several sections, consisting of an equal number of pupils in each, and having these sections contest with one another, the total number of words written in each section to be counted in the summing up. Pupils may also have a longer time—for instance, a week or more—when it will be found that even the parents will become interested in the work.

18. **False Orthography.**—The correction of false orthography has the same force in impressing the rules of spelling on the memory as has the correction of false syntax in impressing the rules for the correct construction of sentences. The principle is, not that we learn the right by seeing the wrong, but that we become critical and observant in correcting the wrong so as to make it conform to usage. The most correct spellers are proof-readers, who are constantly on the alert to detect the mistakes of others. The same is true to a certain extent with teachers. There is not a teacher worthy of the name who does not come out of the school at the close of the term a stronger scholar in both spelling and syntax than he was when he went in, and all because his wits have been sharpened in his efforts to correct the mistakes of his pupils.

That we remember the wrong form in preference to the right when we see a misspelled word, is as sensible an assertion as to say that when we hear incorrect speech we naturally imitate it in preference to that which we know to be correct, or that we naturally incline to such mistakes in mathematics and other sciences as violate the rules. This is conceding a little too much to the doctrine of original sin.

If an exercise in the correction of false orthography be properly conducted, requiring the pupil to point out the error, state the rule that is violated, and make the proper correction, the exercise may be made not only valuable, but also intensely interesting, and no teacher need have any fear that the incorrect form will cling to the memory of the child, and no teacher who has conducted the exercise properly ever found such to be the result.

19. Rules for Spelling.—The English language being derived from so many different languages, there are but few rules for spelling that are not without many exceptions. These few, however, apply to many words, and are important. The teacher should give continued attention in making an application of them wherever possible to the spelling of words. Pupils will thus be enabled to avoid many errors.

The most important of these rules are the following:

1. *Words ending in silent* e *generally drop the* e *on receiving an additional syllable beginning with a vowel;* as, *moveable, movable.*

2. *Words ending in silent* e *generally retain the* e *on receiving an additional syllable beginning with a consonant;* as, *hateful.*

3. *Words ending in* y *preceded by a consonant change the* y *to* i *before any other termination or additional syllable than* 's *and those beginning with* i; as, *witty, wittily.*

4. *When a vowel precedes the final* y, *or when a suffix is added beginning with* i, *the* y *is generally retained in words on receiving an additional termination;* as, *boy, boyish.*

5. *Monosyllables and words accented on the last syllable, ending with a single consonant preceded by a single vowel, double the final consonant on taking an additional syllable beginning with a vowel;* as, *get, getting—begin, beginning.*

6. *When a word ends with two consonants, when the last consonant is preceded by a diphthong, or when the accent is not on the last syllable, the final consonant is not doubled on receiving an additional syllable beginning with a vowel;* as, *cheat, cheated—benefit, benefited.*

7. *In derivative words ending in the syllable* full, *one of the* l's *is dropped;* as, *pailful.*

8. *In such words as receive, believe, etc.,* c *is usually followed by* ei, *and the other letters of the alphabet by* ie. *Siege* and *besiege* are the most important exceptions to this rule.

9. *Words relating to matter end in* ceous, as *arenaceous; all others in* cious. The word *silicious* is the only exception, but this is spelled also *siliceous.*

There are of course some exceptions to the foregoing rules. (See the author's *Tests in Spelling and Pronunciation,* pp. 69 and 70.) The number of exceptions, however, is small in comparison to the large number of words covered by the rules.

20. Spelling-Games.—Spelling, like other branches, is best taught by making it interesting. Anything that will tend to create interest will assist in making the teacher's methods successful. Among the plans for securing variety and interest are Spelling-Games, a few of which are explained below.

The pupils having been placed in a line near the platform, the teacher takes up some class of words, as the names of domestic animals, and proceeds to name the first word; a pupil at the head of the line is called upon to spell it, and, if he fail, he takes his seat; if he spell it successfully, he pronounces a word naming an object of the same kind for the next pupil to spell; and so on, each pupil failing to spell his word or to name one for the next pupil to spell takes his seat until all are spelled down.

The exercise may be varied by selecting different classes of words from day to day, or by spelling several classes in a single recitation. Thus, the following may all be called into use, and the exercise be made not only interesting, but also profitable:

Topics for Spelling-Games.

Trees,	Flowers,	Articles of Iron,	States of the
Fruits,	Minerals,	Articles of Wood,	United States.
Fishes,	Cities,	Names of Boys,	Rivers,
Birds,	Furniture,	Names of Girls,	Wild Animals.

Other games may be devised which will prove equally interesting and practical. The following are suggestions only, the beginning of the game alone being given:

1. Let each pupil spell a monosyllable, and name one for the next to spell.

2. Let each pupil spell and name a dissyllable.

3. Let each pupil spell and name a trisyllable.

4. Vary the exercise and make it more difficult by requiring the next word to begin with the letter with which the preceding word ended.

5. Spell words containing a special sound, as *a* in *arm*, *a* in *ask*, *a* in *all*, long *e*, etc.

6. The first pupil may name and spell a word of one syllable; the second spells a word that rhymes with the first, and names a new word; the third pupil spells a rhyme to the new word given by the second; and so on. Give the same exercise in dissyllables and trisyllables.

21. **Illustrations.**—It will be found a valuable exercise to have pupils illustrate the rules for spelling. Thus, let them bring to class as a part of the lesson a list of twenty words illustrating the rule for dropping the final *e;* again, for retaining the final *e;* also, for doubling the final consonant before syllables beginning with a vowel-sound. In a similar manner give them an occasional exercise in illustrating the other important rules. In

this manner the rules as well as the exceptions will be firmly impressed on the minds of the learners.

Primary pupils may be exercised in writing the names of objects—articles of dress, groceries, domestic utensils, fowls, garden flowers, wild flowers, trees, names of schoolmates, States, rivers, articles of food, and similar words.

22. **Mixed Exercises.**—It will be found a valuable exercise in making pupils critical to write a list of words on the board, some of them correct and others incorrect, and then have the pupils, while in recitation, write the whole list correctly. It will make them critical and observant. An equally valuable exercise is afforded by the teacher's writing a poorly-spelled letter or composition on the board, and having the whole class rewrite it properly.

23. **The Spelling-Match.**—The Spelling-Match will probably always be popular, because it is exciting and affords pupils an opportunity to measure their strength with one another. The method of conducting such a match is so well understood that it need only be mentioned here.

The most popular method is that known as *spelling down*, in which each pupil, as he misses a word, takes his seat, when the word is passed to the next or a new word is taken up. The contest continues in this way, the pupils taking their seats one by one until none remain standing. The side having the last representative or the largest number of representatives on the floor at the close of the contest wins the match.

A variation of this plan is that in which a record of the various gains is kept. Thus, if a word starting with a side is misspelled by that side and correctly spelled by

the opposite side, it is considered a gain for the latter, and is so marked on the tally-sheet; but if it is missed by one side and corrected afterward by the same side, it counts for neither party.

There are also other variations, which it would not be profitable to discuss here. In a spelling-match the cautions given with reference to oral spelling should be observed closely, in order that the contest may be conducted in the fairest manner possible. No opportunity should be given for any dissatisfaction with the teacher's decisions or with his manner of conducting the contest.

CHAPTER IV.

Pronunciation.

Pronunciation is the correct utterance of syllables and words; it includes both *Articulation* and *Accent*.

Articulation is the utterance of the elementary sounds contained in a syllable or a word. Without clear and distinct articulation there can be no correct pronunciation. It is therefore specially important that the elementary sounds of the language be frequently repeated and thoroughly learned.

Accent is the stress of voice on a particular syllable of a word. All words of two or more syllables have one of the syllables accented. Words of more than three syllables often have two of the syllables accented —one more forcibly than the other; the more forcible accent of the two being called the primary accent, and the less forcible the secondary accent. The custom of the best and the most cultivated speakers determines the proper accent. Accent is therefore best learned from spelling-books and dictionaries, in which this custom is recorded and the proper accent marked.

Words may be pronounced either on seeing the forms or on hearing the letters named of which they consist. In reading we pronounce always by seeing the words. If the forms be familiar, we pronounce readily; but

if otherwise, we analyze the word into the letters of which it consists and give to these their usual power.

I. Difficulties in the Way of Teaching Pronunciation.

The irregularity of English orthography, as explained in connection with the methods of teaching spelling, makes it equally difficult to teach pronunciation. Some letters under certain circumstances are silent, some represent more than one sound, and sounds are represented sometimes by several different letters. All this makes the correct pronunciation of a word an uncertainty to the learner.

The pronunciation of the English language is regulated by custom, and is therefore, to a great extent, arbitrary. This is seen in the pronunciation of such words as *ob'ligatory*, which takes the accent on the first syllable, though it would be much more natural to place it on the second. Different parts of the same country vary greatly in the pronunciation of many words, and people of culture, even in the same community, differ in the pronunciation of such words as *economical*, *epoch*, *ballet*, *envelope*, *leeward*, *junior*, and a host of others.

The standard of pronunciation is the usage of cultured literary society. This usage, as has been said, is recorded in our standard dictionaries for the various pronunciations sanctioned, and to these we should refer constantly where there is a possible doubt of correct pronunciation. Where the American standards agree we are safe in accepting their dictum as correct. Where they differ it will be necessary to refer to some standard English works, as Nuttall, and to the most highly-cultured literary men.

Another difficulty in teaching pronunciation lies in the fact that most of those who associate with the children to be taught are continually making mistakes, not only in pronunciation proper, but particularly in the matter of clear articulation. Much of this is the result of habit, as we imitate others in their mistakes quite as certainly as in that which we believe to be correct.

The Teacher's Habits of Pronunciation.—No one needs to be more cautious than the teacher in his pronunciation. His pronunciation will be the model which the pupils will imitate. No matter how much he may drill them in proper pronunciation, if he be slovenly or incorrect in his own speech he will find his example more powerful than his teaching. Let him, therefore, strive to acquire correct habits, in order that they who imitate him and follow his example may pronounce correctly as a matter of habit.

II. Methods of Teaching Pronunciation.

The chief methods of teaching pronunciation are the *Associative*, the *Alphabetic*, and the *Phonic*.

1. The Associative Method.

This method proceeds by teaching the pronunciation of words by associating the name with the word-form. The method has been fully described under the Word Method and the Object Method of teaching a child to read.

It is the natural method for beginners; it is the method that the child pursues in acquiring knowledge from others; and it may also be claimed as being the most logical, as it proceeds from the known to the unknown, from the idea to the word.

The method is, however, limited in its application. By the Associative Method the child is able to pronounce only those words whose pronunciation it has been taught. By this method, whatever knowledge it may lose is gone without hope of recovery. Nor is the child able to glean any knowledge for itself. The Associative Method is therefore not valuable except to a limited extent.

2. The Alphabetic Method.

This method of teaching pronunciation consists in teaching the letters of the alphabet with their corresponding sounds, and having the pupils pronounce words by observing the combination of letters. They may name the letters first, or they may glance at them and then pronounce the word by their knowledge of the powers of the various letters.

The argument that naming the letters is necessarily a part of the Alphabetic Method is not correct. The child that pronounces words at sight looks at letter after letter, and judges in its own mind as to the force of each letter, and pronounces the word according to that judgment, as any one may determine for himself if he will take a class of children that know nothing of the elementary sounds as such. The process by which they determine the force of the various letters is possibly a painfully slow one, but there can be no question that to a great extent we all learn to pronounce in that way.

Let a new word be placed before us; we do not pronounce it by association, for we know nothing of it, nor do we pronounce it by the phonic elements of which it consists, for we do not know what these are, nor are they

represented in ordinary writing. Our only resort is to the letters of which the word consists. We see these, and, knowing their ordinary power and force, we are enabled to form a reasonably correct judgment of the pronunciation of the word at sight; and this we do by the Alphabetic Method.

If pupils were taught the names of the letters only in learning the alphabet, this method of teaching pronunciation would be of little practical value, but no good teacher teaches the letters without also teaching the sounds which they represent, and no intelligent pupil learns the names of the letters by the old plan, in which the alphabet was taught as distinct from spelling and reading. The child whose exercises are selected properly, as in lessons where there is an analogy of sound, something like the following:

fan	bet	in	dot	bun
man	let	bin	hot	fun
pan	met	pin	lot	gun
ran	pet	sin	not	run
tan	set	tin	rot	sun

will learn to pronounce readily and rapidly by the Alphabetic Method, because, after pronouncing a few words, he begins to see that the shape of the mouth in pronouncing many of the letters is substantially the same as in giving the elementary sound which that letter represents.

The objection to the Alphabetic Method, as pursued in the old-time school, lies not so much against the method as against the illogical manner in which the words were arranged and the aimless way in which the

teacher followed the book. The argument urged in speaking of a child's learning to read, that "The letters do not spell the words, and therefore the knowledge of the letters does not aid him in reading the words; they *do* spell something else, and therefore are an actual hindrance in learning to read," is simply absurd—almost too absurd, indeed, to merit attention. Where would be the knowledge of the writer who advocates this argument, or what would even a child's knowledge be worth, if it knew nothing of the alphabet and the power of the letters which the characters represent? As has been said before, much of the opposition to this method is based on the assumption which fails to distinguish between the literal and the phonic spelling of a word. Words consist of letters as well as of sounds, and this distinction must be kept clear in the mind of the learner. Indeed, there could be no written language whatever without the characters (letters) which we use to represent spoken words.

3. The Phonic Method.

By the Phonic Method of teaching pronounciation the pupils are first taught the elementary sounds, and in connection with these the characters which represent them. These characters may be the letters of the alphabet with distinctive marks to indicate each sound, or they may consist of a special character to indicate each one of the forty or more distinct sounds.

When the letters of the alphabet are used, the variations in sound may be indicated as follows: *ȧle, ä̊t, ä̆rt, å̊ll,* etc., or by the usual diacritical marks as found in the dictionary. Necessarily, the consonants must also

have special marks wherever a letter, as c, may represent more than one sound, and the silent letters should be indicated, so that the pupils may know which letters are sounded and which are silent in the pronunciation of a word.

In order to make this method successful, it is necessary that the books be printed in marked type, or that the teacher mark each word with pen or pencil. It is claimed for this method by those who advocate it that it is both natural and philosophical. It would be both were our language a phonetic language, in which every sound is represented by a separate character.

Serious objections have been raised to the purely phonic method:

1. Pupils who have learned to pronounce by this method find the transition to unmarked letters a difficulty simply postponed, but made none the easier on that account.

2. Pupils who learn to pronounce by the Phonic Method find a difficulty in learning to spell English as it is.

3. There are many words in the English language which could not be classified by analogy of either spelling or pronunciation in such a way as to be of any use to the learner.

When used with the Alphabetic and the Associative Method the Phonic Method is valuable, but we think the advocates of this method have claimed too much for it when used as a distinctive method, and the schools in which it is used as a distinctive method are few in number.

III. Suggestions on Teaching Pronunciation.

1. Make a judicious combination of all the methods in teaching pronunciation.

2. Begin to teach words as suggested under the Word Method and the Object Method of teaching reading.

3. In pursuing the Alphabetic Method do not fail to arrange the first lessons according to analogy of sound.

4. Let the first lessons by the Alphabetic Method have no silent letters, no equivalents, and, as far as possible, no variable letters except the vowels.

5. Let the children pronounce the words for themselves whenever possible.

6. Train them to notice the position of the vocal organs, particularly in giving each consonant.

7. If the spelling-book or other work used for pronouncing exercises is not properly arranged, use the blackboard and arrange words in such a manner as will permit you to teach pronunciation in a philosophical way.

8. Train pupils to pronounce readily at sight as preparatory to teaching them to read.

9. Let pupils look carefully at a word, to see the letters of which it is composed, and then name it without spelling it aloud.

10. Have pupils analyze words into both their letters and their sounds. A good plan of conducting a new exercise is the following:

a. The teacher pronounces the word, and the pupil imitates.

b. The pupil names the letters and pronounces the word.

c. The pupil gives the sounds of the word and pronounces.

d. The pupil pronounces the word at sight.

11. Do not insist on differing with the pronunciation of those with whom you associate, unless their pronunciation is absolutely incorrect; even then train them rather to imitate you than correct them. They will see their mistakes for themselves.

12. Do not use affected pronunciation. If you believe *ēither* and *neīther* to be strictly correct, use them instead of *īther* and *nēither;* but if you simply pronounce in this way to imitate somebody else, or pronounce so because you want to appear scholarly, you will deceive no one so much as yourself.

13. Always remember that pronunciation is a matter of taste and culture, and that while others may differ from you in their pronunciation, both you and they may be correct.

14. Teach your pupils to form a habit of pronouncing correctly. Weakness of scholarship is more readily detected here even than in spelling.

15. Give your pupils a list of frequently mispronounced words, and drill them every day on a few of these. You will be surprised, when you come to make up the list, to find how many you yourself have been accustomed to mispronounce.

IV. Articulation.

There are two steps in teaching Articulation: the first of these consists in training a child to distinguish the sounds of the language; the second, in training him to utter them.

Methods of Teaching Articulation.

The methods of teaching Articulation are properly two—by *Imitation* and by *Phonic Drill.*

Imitation.—Children learn to articulate much as they learn to talk, by imitating others. They speak naturally in imitation of their associates. Looking upon the teacher, as they do, in the light of being an authority in scholarship, they will naturally imitate him. It is therefore specially important that his articulation be both clear and correct. Pupils to some extent imitate also their parents and older brothers and sisters, particularly if these be scholarly; and it is important, therefore, that these also be correct in their articulation if it is hoped to make the younger children correct in their speech.

The teacher can do much in training his pupils to correct articulation by pronouncing certain words or syllables and having his pupils imitate him closely.

Phonic Drill.—This consists in a drill in the elementary sounds. Pupils, as has been suggested, should have a frequent drill on these sounds until they are able to enunciate each one of them distinctly and correctly. The drill may with profit be carried through all grades of schools from the lowest to the highest. As has been heretofore suggested, these drills may be varied so as to include drills in rate, force, pitch, etc., in reading, and thus be made doubly useful.

The ear should be carefully trained to distinguish the sounds, so that they may be given accurately. Particu-

lar care should be given to those which are difficult for some pupils, as *s*, *th*, *j*, *w*, and others.

Suggestions on Teaching Articulation.

1. Drill pupils frequently on the pronunciation of sentences containing difficult combinations, for the purpose of giving them distinct articulation. Take such sentences as the following: She sells sea-shells; Shave a cedar shingle thin; Masses of immense magnitude move majestically through the vast empire of the solar system.

2. Where stammering is the result of habit, it may frequently be corrected by requiring the pupil to speak or read more deliberately. It is often the case that one who stammers in speaking or reading will sing faultlessly, showing that in such a case stammering is not caused by a defect in the vocal organs, but that it is the result more probably of habit or excitement.

When stammering is the result of timidity, the teacher must cultivate in the pupil a greater confidence in himself.

Unless there is some defect in the vocal organs, stammering may usually be corrected by having the pupil both speak and read for a time slowly. It is a curious fact that often one who stammers will read poetry, where the time is measured, much more readily than he will read prose. This is an additional argument in favor of the pupil's movement being deliberate.

3. When lisping is the result of affectation, it may frequently be cured by a little judicious ridicule and by showing the pupil how it mars the beauty of speech. The teacher may in such a case read in imitation of the pupil.

But, usually, lisping is the result of a defect in the tongue. The tongue is sometimes so long as to strike the teeth when the *s*-sound is to be produced, and the result is that the *s* changes to *th*, because the tongue, instead of being free, presses against the teeth or protrudes between them. In such cases the teacher should show the child how to place the tongue that the *s*-sound may be produced, and then have the pupil imitate him. Long practice is sometimes necessary to correct the fault.

4. Slovenly and lazy speech should be corrected. There are many who mispronounce such words as *government*, *something*, *nothing*, *which*, *wheat*, etc., simply through carelessness.

5. Local errors in articulation should receive the attention of the teacher. The use of *s* for *z*, *v* for *w*, *w* for *v*, *th* for *d*, *ch* for *j*, *j* for *ch*, *d* for *t*, *p* for *b*, etc., should be condemned and carefully corrected.

The clipping of syllables, the adding of letters where not needed, and the substitution of one vowel-sound for another, as *gospil* for *gospel*, or *innosuns* for *innocence*, are all errors that ought to be corrected by the teacher whenever they occur.

6. Caution pupils to articulate distinctly in conversation as well as in reading or in more formal speech.

7. Do not waste any time in teaching pupils how to place their vocal organs, except where their articulation is either indistinct or incorrect.

V. Accent.

In order to learn the general principles governing Accent, it is best for the student to consult one of the standard dictionaries, but the rules even as stated there

are liable to very many exceptions, and it would not be profitable, therefore, to discuss them here.

Compound words in English frequently, when first formed, seem to have two accents. This by many writers is indicated by the hyphen. Thus, originally we had the expression "a black board′," then "a black′-board′," with accent on both syllables, and finally, "a black′board," with the accent on the first syllable and the hyphen dropped. This rule is, however, so frequently violated that it can hardly be regarded as a rule.

An important principle, which would save many mispronunciations were it generally understood, is that in compounds the adjective or modifying part of the word usually takes the accent, as in *school′-house*, *pen′-knife*, *bay′-rum*, *bay′-window*, etc.

Methods of Teaching Accent.

Grouping.—Accent may be taught by grouping words according to the accented syllables. Thus, it will be found a valuable exercise to have pupils name a certain number of words of two syllables, names of objects, accented on the first, then a number accented on the second, then a number of verbs accented on the second or on the first, and so on.

Imitation.—Accent may be taught also by imitation. In this case it is necessary that the teacher should be careful to give words their proper accent, in order that pupils may have correct models to imitate. If the teacher be in doubt as to the proper pronunciation of a word, he should consult the dictionary at once, in order that the pupils may have a correct guide.

Errors.—Pupils should be critical in their pronunciation of words. Their attention should be called particularly to such common words as they are liable to mispronounce in their daily conversation. Bad habits in pronunciation can be corrected only by the most persistent care and practice.

Pronouncing Exercises.—These are quite important in teaching accent. The teacher may with profit substitute an exercise of this kind at least once a week for the regular exercise in spelling. Teachers themselves will be surprised at the number of words which most persons mispronounce habitually. Words like the following may prove not only interesting, but also valuable, in showing pupils their mistakes both in accent and in uttering the vowel-sounds:

abdomen,	bomb,	donkey,	bromide,
acclimate,	booth,	encore,	inquiry,
acoustics,	boudoir,	esquire,	joust,
allies,	bouquet,	forge,	legislature,
Adonis,	broth,	frost,	lieu,
area,	canine,	idea,	long-lived,
assent,	cascade,	occult,	microscopy,
benzine,	desist,	isolated,	mogul,
orchestral,	disdain,	precedence,	nausea,
ornate,	Persian,	recluse,	solitaire,
overseer,	phthisis,	revolt,	steam-engine,
mamma,	placard,	romance,	telegraphy.

Suggestions on Teaching Accent.

1. Give occasional exercises consisting of words pro-

miscuously arranged, and have the pupils write these and mark the accent.

2. Give occasional short pronouncing exercises in which the pupils write out the words and indicate not only the accent, but also the elementary sounds and the silent letters, by using diacritical marks.

3. Have pronouncing-matches for the purpose of creating interest and variety. In this case the teacher may spell the words or write a number on the board, and require the pupils to copy them and mark the proper pronunciation; or lists of words may be handed to the pupils, from which they pronounce orally.

4. Call attention to words on which authorities differ in the location of accent or in which the accent may with authority be located in more than one place. Such words as *mal'efactor* or *malefac'tor*, *cement'* or *cem'ent* when used as a noun, *car'mine* or *carmine'*, *clem'atis* or *clema'tis*, *dem'onstrate* or *demon'strate*, *dec'orous* or *deco'rous*, will serve the purpose.

5. Train the pupils to use the dictionary intelligently. See that they understand how to use the diacritical marks there given.

CHAPTER V.

Lexicology.

Lexicology is a term which has been used by some authors as naming the science which treats of the meaning of words. Etymology (from the Greek *etymon*, the true meaning, and *logos*, discourse) would probably be a more appropriate term. Either term will, however, answer our purpose. It is proposed here simply to show how the meaning of words may be acquired by the learner.

It is necessary, of course, that a pupil should comprehend fully the meaning not only of the words he uses, but also of those with which he comes in contact in his daily reading of books or newspapers. It is important that he should know the shades of meaning existing between words of somewhat similar import, in order that he may express himself definitely and correctly.

There are a number of ways by which we may acquire a correct knowledge of the meaning of words. Among them the following are the most important:

1. **By their Use in Conversation.**—Children gain their first knowledge of the meaning of words by their use in the conversation of those around them. If the conversation of the parents be incorrect, if the terms they

use be incorrectly applied, the child's habit of speech will be similarly incorrect. But, on the other hand, if the words used by the parents and other associates of a child be strictly correct, those of the child will also be correct. Children learn the meaning of many words because they hear them associated with objects, actions, or qualities in the daily conversation of those around them.

2. By Reading.—When pupils have once learned to read they will glean the meaning of many words new to them as these are met with in the printed page. They learn the meaning here much as they do in conversation, by the force which the word seems to have in a sentence. It is a noticeable fact that children who read the most or have the most intelligent associates at home are they who have the choicest vocabulary and who make the most appropriate use of words.

3. By their Use in Sentences.—Pupils learn the meaning of words readily also by their use in sentences. A word which used by itself is meaningless to a pupil when placed in a sentence may convey to him a definite idea. Indeed, children often grasp the meaning of words more readily and more correctly in this way than they can by consulting a formal definition as found in the dictionary. Every new book they read gives them not only new thoughts, but also the words with which to clothe those thoughts.

4. By Definitions.—Formal definitions are in many cases necessary to give the learner a clearer conception of the meaning of a word. Many scientific terms could in no other way be taught equally well. We may speak of a *fiord* again and again, but until the pupil learns the

definition or sees the object he has no clear idea as to what the word means.

5. By Illustration.—The meaning of words may be taught by illustrations and experiments. Thus, the difference between the meaning of the words *inflammable* and *combustible* may be illustrated to a child by showing that a number of substances burn without a flame, and are therefore simply combustible, while others burn with a flame, and are therefore not only combustible, because they burn, but inflammable, because they burn with a flame. Thus, also we may illustrate many other words as we teach them by showing the action or the object as we use the word.

6. By the Study of Synonyms.—Synonyms are words which have the same general signification, as the two words *love* and *like*, with greater or less shade of difference in meaning. The English language is rich in synonyms, from the fact that it is a composite language, having acquired substantially the same term from various languages. Thus, we have *fatherly*, *motherly*, etc. from the Anglo-Saxon, and the corresponding *paternal*, *maternal*, etc. from the Latin.

The study of synonyms enables the pupil to express finer shades of meaning which would be impossible without them, and their misuse is often the source of very ridiculous errors.

7. By the Study of Etymology.—By the study of etymology is here meant the technical study of the roots of words, together with the prefixes and suffixes by the aid of which other words are formed. The study of technical etymology often gives us a knowledge of the original signification of a word which we probably could

not reach in any other way. Thus, in the word *education*, when we learn that it is from the root *educo*, *educare*, to foster, to feed, to teach, we have a clearer notion of its strictly correct use; and the same is true of other words.

8. **By the Study of Other Languages.**—It is especially true that the study of Latin and Greek, which give us the basis of many of our derivative words, enables us to learn the meaning of many words in our language; but it is true also that the study of other languages, particularly German and French, not only enlarges our vocabulary, but also enables us to have a clearer conception of the meaning of the words we use as derived from those languages.

Suggestions on Teaching Lexicology.

1. The conversation of those who are associated with children should be such as will enable the latter to gain a correct knowledge of the meaning of words. For this reason slang should be rigidly avoided.

2. It will be profitable for the teacher to relate an anecdote or give an interesting narrative or description in choice language. His pupils will not fail to catch the words and make them a part of their own vocabulary.

3. Pupils should be encouraged to read interesting books well written, such as *Robinson Crusoe*, *The Swiss Family Robinson*, and others in which the diction is pure and the style interesting.

4. In the reading-lessons pupils should be asked to tell in their own language the meaning of certain words, or they may be permitted to substitute other

words if they can preserve the meaning of the sentence unchanged.

5. Pupils may show that they know the meaning of words by incorporating them in original sentences.

6. Object-lessons on words may be given to teach accurate discrimination in the meaning.

7. In teaching the meaning of words by definitions the teacher must see that the definition is not more difficult to grasp than the word defined.

8. Definitions should be correct. Thus, to define *the world* as *the universe* is both absurd and incorrect.

9. It is better to learn the meaning of words in sentences than by the use of definitions. An alcove is a recess, but for the teacher to say in his programme that the school will have an "alcove" between the exercises would scarcely be considered correct.

10. Teachers should not require pupils to commit formal definitions, except where they are the scientific definitions of terms.

11. Pupils should be trained to make a note of such new words as they meet, and examine the dictionary to learn their true meaning.

12. The study of synonyms should be encouraged, and pupils should be required to illustrate the difference in sentences. Pupils will thus learn where words are interchangeable and where they are not.

13. Scientific definitions should be as clearly stated as possible.

14. In teaching the etymology of words the subject should be made practical. Both the analytic and the synthetic method may be used. The analytic is the more interesting for beginners.

15. It will be found a valuable exercise to take a root, as *traho*, I draw, and let the pupils write as many words derived from it as possible, such as *attract, attraction, subtraction, subtrahend, distraction, traction, trace, tract.*

16. Pupils should be taught to study the history of words. Let the teacher give them the history of a few such words as *pagan, idiot, silly, knave, candidate, prevent, stove,* etc. These will prove of such interest that children will readily search out the history of any word suggested by the teacher. Teachers may gain valuable aid from Trench *On the Study of Words* and the works of Whitney, Marsh, Horne Tooke, Max Müller, Schele de Vere, and others.

17. The meaning of words as used in a figurative as well as in a literal sense should be explained.

18. The teacher should show to pupils how the language changes by the admission of new words as needed, and by dropping the old ones when no longer necessary to express thought.

19. Never require the definition of a word whose meaning is already well known.

20. Mark the difficult words in the advanced reading-lesson, and require pupils to search for their meaning.

21. Require each pupil occasionally to bring to class a word and define it orally, then use it in a sentence.

22. The teacher should frequently give the pupils equivalent terms for words they use. Thus, if they use the Saxon *nightly*, he should give them the Latin *nocturnal*, or if they use the Latin *felicity*, let the teacher give them the Saxon *happiness*. In this way he will not only enlarge their vocabulary, but also train them to dis-

tinguish accurately and readily the various shades of meaning expressed.

23. Exercises similar to the following will prove not only interesting, but also valuable. These may be conducted as word-matches, somewhat in the nature of spelling-matches:

a. Let each pupil in turn give a word having a certain suffix, as *er*, and define. Thus, *singer*, one who sings.

b. Let each pupil in turn name a word having a certain prefix, as *con*, and define.

c. Name a root, as *facio*, and let each pupil in turn give a word derived from it, and define.

d. Let the teacher name a word, and the pupil give a synonym.

e. Let a pupil name a word, and his opposite give a synonym, and this pupil in turn name a word for which his opposite gives a synonym.

f. Let one pupil name a word, and the next a word of contrary meaning.

g. Let the teacher analyze a word, as *graphic*, and then have all the pupils write as many words as possible derived from the same root. This exercise may be still more extended as the teacher's judgment may direct.

24. Pupils should be trained, as they advance, to form definitions for themselves.

CHAPTER VI.

Language-Lessons and Grammar.

Language-Lessons are such lessons in the use of language as are adapted to give training in the correct use of one's mother-tongue. They should precede any efforts to teach grammar as a science. Like most other primary teaching, they are based properly on induction, and the process of teaching is essentially synthetic.

It must be remembered that the aim of language-lessons is not to create thought or furnish the words with which to express thought, but rather to teach the proper arrangement of language in expression. The proper function of lessons in English is that of training pupils to express themselves in accordance with the best usage of our language.

Children learn language to a great extent by imitation. It is therefore of great importance that the teacher express his thoughts in accordance with accepted and correct usage. It is equally important that the children in their conversation, in their compositions, and in their class-recitations use none but correct language; and to this end the teacher should cultivate a spirit of generous criticism.

Language-lessons are important not only because they

teach the child the correct use of language, but also because they lay the foundation for proper methods of teaching grammar as a science.

The objection to the teaching of grammar—or what has been called Technical Grammar—in our schools does not hold against grammar itself, but rather against the method of teaching it. The difficulty lies in the fact that we have attempted to teach the science itself before the mental faculties of the children were sufficiently developed to understand and comprehend the principles of the science. As a result, the work of learning consisted mainly in memorizing definitions and rules, without any corresponding ability to apply them in the construction of sentences. The work has been deductive, while the true plan of teaching primary grammar is inductive—first the idea, then the name, then the definition.

Language-lessons should precede technical or scientific grammar. Exercise should follow exercise until the pupil becomes expert in the use of English and writes correctly as a habit. Pupils will take great delight in the construction of sentences, and teachers will find that the pupil's consciousness of his power to compose will be to him a great delight.

I. Principles.

The following principles must be observed in the teaching of language:

1. **Language is Acquired Chiefly by Imitation.**—The child's vocabulary is full or meagre, and its manner of expression correct or incorrect, according to those of its parents and others with whom it associates. Habits of speech are formed much like other habits, and they take

their coloring from those after which they are copied. If, therefore, the speech of the parents and the child's other associates be correct, and the vocabulary extensive and varied, we may reasonably expect the habits of the child to be correct. But if the surroundings of the child be unfavorable to language-culture, we may expect its speech to be defective and its language often incorrect.

2. **Language-Teaching should be Inductive.**—Instead of beginning with the definition, elementary instruction should end with definitions. The true plan in teaching language is to teach first the idea thoroughly, then associate the name, and finally give the scientific definition. Thus, in teaching the noun, for instance, it is important that the pupil first grasp the idea that all objects have names, and that these names may all be classed under one division of words; the second step is to teach the name-word or *noun;* and, lastly, to give such a definition as is clear to the mind of the child.

3. **Language is Learned most Readily by Use.**—This is in accordance with the law of growth by exercise. The pupil, therefore, should not only learn the name and the definition, but the teacher should see that the pupil also has daily exercise in making an application of his newly-acquired knowledge. He should not only be required to select the words answering to the definitions learned, but as soon as the idea of a sentence has been developed he should have practical exercise in the construction of sentences.

4. **Language is the Basis of Grammar.**—Grammar does not make language: it is simply a record of the usage of language as found in the speech and writings of the best authors. It is the office of the grammarian to for-

mulate the laws which seem to have governed the most reputable writers and speakers in their use of language, as well as the laws on which the science of grammar is based. A series of language-lessons, therefore, naturally precedes technical instruction in the science of grammar.

5. **Teaching in Language should be Systematic.**—While it is true that many eloquent orators have spoken and many eminent authors have written without possessing a technical knowledge of grammar, it is equally true that the study of language through the models of others was to them a life-work. Not all have the time or the leisure, or even the inclination, to study systematically and critically the model literary productions of either the ancient classic writers or those of our own language in order to develop literary ability in ourselves. It is necessary, therefore, that we should understand the principles of the science of grammar, and that we should have ability to apply these principles in the use of language. Any preliminary work, therefore, in the nature of language-lessons should be systematic, and be in strict harmony with the principles to be taught subsequently. Every lesson given should have an aim, and the work should be systematic from the beginning.

6. **Oral and Written Language should Proceed Simultaneously.**—Of course the child will learn to talk some years before it will be able to express itself on paper. When, however, it has once learned to write it should be taught to write every sentence that it expresses orally. Oral language-lessons without the written work are but partially effective in giving to the pupil correct language-culture.

II. Method of Teaching Language-Lessons.

The extended plan here given may be followed in teaching language-lessons methodically. It is substantially that developed by the author in his work *Lessons in English.*

Begin with a Picture.—The teacher may present a picture before his class, and let the pupils examine it for a short time. He should then talk freely and in an interesting way to his pupils about the picture, the objects represented in it, what they seem to be doing, etc. Having once aroused the children's interest, he may ask a number of questions about the picture, to which the pupils may write answers.

The next step is to have the pupils write about objects seen in the picture. The teacher should also act as a guide, directing the pupils at first what to do. Thus, Write something about a boy; Write something about a tree; Write something about a dog; and thus with regard to other objects represented in the picture.

Copy Sentences.—Before the child knows what sentences are, let him copy sentences. See that he copies correctly, using at first only declarative sentences. After having copied sentences for an exercise or two, teach him that a *sentence* says something about some object. Then question him on the sentences copied, as to what object is spoken of in each sentence.

The Capital Letter.—Having gained some notion of what a sentence is, call the pupil's attention to the sentence as he has written it and ask him, "With what does each sentence begin?" At this point he may be taught the rule, "*Every sentence should begin with a capital letter;*"

and from this point on he should never be permitted to violate that rule, and his attention should be called to the rule wherever a mistake is noticed in any of his exercises.

The Names of Objects.—Pupils may also be taught at this point that "*Anything we can hear, see, touch, taste, smell,* or *think about* may be called an Object." They should then be required to copy more sentences, and name the object spoken about in each. They may also be required to write the names of objects in columns; thus, the names of ten objects in the school-room, ten objects found on the farm, ten found in the woods, etc.

Definition of a Sentence.—The pupil, having learned that a sentence says something about some object, should be required to write a number of sentences about objects named by the teacher, the latter being careful to select such words as *school, chair, fire, trees,* and others familiar to the pupils. It will be the proper time now also to teach the definition of a sentence, that it is "*A thought expressed in words.*"

Immediately following this, a number of expressions should be placed on the board, and the pupils be exercised in determining which are sentences, and which not, also giving the reason why each is or is not a sentence.

Definition of a Noun.—The pupil may be required to complete a number of sentences by inserting the name of an object in such expressions as follow:

——— swim. ——— run. ——— skate.

The pupil may now be taught that the name of an object is called a *Noun,* and the simple definition may also be given: "*A Noun is the name of anything.*"

Selecting Nouns.—Immediately after learning the name and the definition, pupils may be exercised in their reading-books or a newspaper in selecting all the nouns in a line or a sentence, telling why each is a noun.

The Subject of a Sentence.—In developing the idea of the subject of a sentence the teacher should first require pupils to write a number of sentences about various objects which they may see in a picture or which the teacher may name to them. They may then be taught that "*In a sentence that about which something is said is called the Subject.*" The Subject may then be defined, "*The Subject of a sentence is that about which something is said or asserted.*"

Exercises on selecting subjects in giving simple sentences should be required, and pupils should also be required to complete sentences by supplying subjects, as in the following expressions and many similar ones:

——— run.	——— cry.	——— freezes.
——— bite.	——— play.	——— sing.

The Predicate of a Sentence.—In developing the idea of the Predicate the plan is much similar to that of teaching the subject. The pupils having written a number of sentences, may be told that "*In a sentence that which is said or asserted of the subject is called the Predicate.*" The definition of the Predicate may follow: "*The Predicate of a sentence is that which is said or asserted of the subject.*"

Exercises should then follow in selecting predicates and subjects from given sentences, and further exercises in supplying predicates in expressions similar to the following:

Snow ———.	Boys ———.	Teachers ———.
Robins ———.	Girls ———.	Rats ———.

Diagramming.—Pupils will take great delight in diagramming or written analysis if properly taught and a simple system be used. The author prefers the plan he gives in the following exercises, because pupils write naturally across the page, and because it is the simplest possible. Let the learners, as soon as they can distinguish predicate from subject, indicate their work on the board as follows, the upper left-hand space being used for the subject, and the lower space to the left of the perpendicular for the predicate:

The whole class can in this way place the entire lesson on the board, and they enjoy the work.

Oral Analysis.—Oral analysis should always accompany written analysis. Written analysis is useful mainly on account of the interest it creates, and because, like written arithmetic, it is a great time-saver. The pupils, having placed the sentences on the board as above indicated, may take a pointer, and, pointing to the written sentence *Horses run*, may analyze as follows:

Horses run is a sentence, because it is a thought expressed in words.

Horses is the subject, because it is that about which something is said.

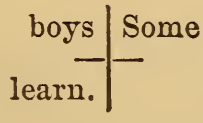
Run is the predicate, because it is that which is said of the subject *Horses*.

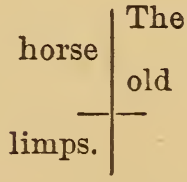
Subjects and Predicates.—A number of exercises should be given not only in selecting subjects and predicates, but also in supplying either as called for. Thus, the teacher may name the word *Boys*, and require each

member of the class to name a different predicate, or he may give the word *play*, and require each member of the class to name a different subject from those given by others.

The Declarative Sentence.—The pupil's comprehension of a sentence by this time will be reasonably clear, and he may now be taught that "*Any sentence that says something may be called a Saying Sentence or a Declarative Sentence.*" His attention should be called also to the fact that a period follows every declarative sentence, and he may be required to commit to memory the rule that "*A period should be placed after every declarative sentence.*"

The Modified Subject.—The pupil should be taught early that the subject may consist of several words, as, *Some boys* learn; *The old horse* limps; and in order that they may continue the written analysis they may be taught to place the sentences on the board as follows, where the modifiers are always placed as near to the right of the words they modify as possible:





They should also be required to name the entire subject, and to write sentences containing modified subjects, never forgetting the use of capital letters and the period.

Additional exercises may be given by placing a number of adjectives, nouns, and verbs in separate columns, and having the pupils select such to be used together as are appropriate.

The Modified Predicate.—The pupil may be taught also that the predicate may consist of more than one word;

as, They *came soon;* The wind *blew fiercely.* These also should be analyzed on the board, the same principles as heretofore explained being observed:

Pupils should now name the entire predicate, as well as the entire subject. They should also write easy sentences in which both subject and predicate are modified, and also be required to select appropriate words to form sentences where such words are arranged in columns as adjectives, nouns, verbs, and adverbs.

The Interrogative Sentence.—Having learned the use of the declarative sentence, and having learned that either subject or predicate may consist of a number of words, the pupils may be taught that "*Every sentence that asks a question is called a Question Sentence or an Interrogative Sentence.*" The pupils' attention should be called to the fact that every interrogative sentence is followed by an interrogation-point.

Declarative and Interrogative.—As soon as pupils have been taught to distinguish between declarative and interrogative sentences they should be required to select sentences in their Readers, telling which are interrogative and which declarative.

They should also write a number of sentences at the teacher's dictation, beginning each with a capital letter, and putting a period or an interrogation-point after each as may be required.

They should be required also to change declarative sentences to interrogative. Thus, "School was dismissed at noon"—"Was school dismissed at noon?"

They should also be required to change interrogative sentences to declarative, writing each properly. Thus, "Is it very pleasant to-day?"—"It is very pleasant to-day."

The exercise may be varied by the teacher's participating in the lesson, sometimes giving a question and sometimes an answer, while the pupils write the corresponding answer or question.

The Verb.—In teaching the Verb it is best to use only such verbs at first as express action. A short sentence may be taken, as "*The bird flies,*" and the teacher may ask a question similar to the following: "What word shows what the bird does?" The pupil answers, "Flies." The teacher may also ask, "What word shows action?" He may then explain that words which express action are called verbs. This may be followed by the definition of a verb, though it is not the full definition, that "*A verb is a word which expresses action or being.*"

Suggestions.—1. The pupil should next be exercised on naming verbs in sentences given.

2. He should be required to select from his reading-lesson such verbs as he may recognize.

3. He may be exercised also in pointing out both verbs and nouns from a short poem or other selection, and be required to write the nouns in one column and the verbs in another.

4. The child should be taught that a verb may consist of one word or more; as, *sing, may have sung.*

5. The child should also be exercised in practical composition, by being required to take certain words that

express action and construct sentences to be submitted at the next recitation.

The Adjective.—In teaching the Adjective the teacher should show that sometimes a word is placed before a noun to tell what kind of object is meant; as, *good* boys, *little* boys, *bad* boys. The teacher may show that the words *good*, *little*, and *bad* show the kind of boys meant. The teacher may then name another word, as *room*, and let the pupils select a number of appropriate words to place before it. These, he explains to them, are adjectives.

Suggestions.—1. It is best to use only such adjectives at first as denote quality.

2. The pupils should first be required to point out the adjectives in a list of sentences prepared by the teacher.

3. They should be required to write adjectives to limit such nouns as the teacher may name. His part of the exercise may be placed on the board as follows:

——— boys.	——— men.	——— house.
——— trees.	——— hay.	——— birds.

4. The teacher may assign a number of nouns, and have the pupils write as many adjectives as possible descriptive of each object named.

5. The teacher may train his pupils to see also that some adjectives, as *a*, *the*, *five*, etc., do not denote quality, but simply limit the nouns before which they are placed.

6. After having become expert in pointing out adjectives in sentences wherever met with, the pupil may be required to memorize the definition.

7. The pupil may also be taught that when a word

limits or qualifies the meaning of another, the limiting or qualifying word may be called a *modifier*.

8. He should then be directed to write modifiers of subjects, instead of the blanks placed on the board by the teacher, as in the following:

——— leaves fall, ——— pencil was broken,

—adding either one or more modifying words, as *Autumn* leaves fall, *The new* pencil was broken.

9. The analysis of these sentences should be both oral and written, the written form being as follows:

leaves | Autumn
fall. |

pencil | The new
was broken. |

The Pronoun.—In teaching the Pronoun it may be explained to the pupil that instead of repeating the same noun so frequently, we may substitute another word meaning the same thing. Thus, instead of using the name *Henry* in the following, and saying, "Henry found Henry's knife," ask the pupil to use a word in place of *Henry* as if it were his own name, and he will say, "I found my knife," or in speaking to another, "You found your knife," or in speaking of another, "He found his knife."

Suggestions.—1. Give the pupils a number of sentences in which the same noun is so frequently repeated as to produce an unpleasantness of sound, as, "John gave John's box to John's teacher," etc., and let the pupil substitute pronouns instead.

2. Let the pupil point out the pronouns in given sentences, and name the word, wherever possible, for which the pronoun is a substitute.

3. Let the pupil write pronouns in such sentences,

containing blanks, as the teacher may give, as in the following:

Both Henry and ——— sister are pleased with ——— books.

4. Teach here that the pronoun I is always a capital letter.

The Adverb.—In teaching the Adverb it is best to confine the first lessons to the teaching of such words as answer the questions *How? When?* or *Where?*

It may be shown to the pupil that often a verb is modified by a word which answers one of these questions; as,

The bird flies *rapidly.* (How?)
The bird flies *upward.* (Where?)
The bird flies *now.* (When?)

The pupils may be taught that all words that tell *how, when,* or *where* something is done are called adverbs.

Suggestions.—1. Let the teacher give the pupils short sentences in which the verb may be limited by a number of adverbs. It may be placed on the board as follows, the pupil writing the adverbs:

The bird flies { now. / rapidly. / away. / upward. / well. / gracefully.

2. These sentences may then be diagrammed or analyzed in writing, as follows:

bird | The
flies | now.

bird | The
flies | away.

3. In a similar manner the pupil may be taught that

sometimes an adverb itself is modified, as in the sentence, "The horse runs *very* rapidly."

4. Let the pupil indicate the modifying power of the word *very* by writing the sentence as follows, placing the modifier to the right of the word which it modifies:

horse | The
runs | rapidly. | very

5. The pupils may now be taught that words which are used to modify adverbs are also called adverbs.

6. Show the child that an adjective may also be modified, as *very* tall, *extremely* cold, etc.

7. Let a number of sentences be given from which the pupil may select not only the adjectives, but also the words which modify these adjectives.

8. The pupils should have exercise also in inserting adverbial modifiers of adverbs and adjectives in given sentences. These sentences should then be analyzed, both orally and by the written plan. The written form may stand as follows:

man | A
innocent | perfectly
suffered | greatly. | very

9. At this stage the general definition of an adverb may be given as follows: *An Adverb is a word used to modify the meaning of a verb, an adjective, or an adverb.*

10. Columns may now be arranged, the first containing nouns and pronouns; the second, verbs; the third, adjectives; and the fourth, adverbs. From these the pupils should be directed to select words and construct sentences.

11. The correct use of *a* before consonant-sounds, and *an* before vowel-sounds, as also the proper use of *those*

instead of *them* when placed before nouns, may be taught at this time.

The Preposition.—The Preposition may be taught readily by the teacher's taking two objects—as, for instance, a *pencil* and a *book*—and placing them in different positions, then leading the pupils to name the words which show relation.

Thus, "The pencil lies *on* the book;" "The pencil lies *in* the book;" "The pencil lies *under* the book." Let the pupil in each case show what word expresses the relation between *lies* and *book*.

The pupil may be taught that all words that show the relation between a noun or a pronoun and some preceding word is a preposition.

Following this, he may be taught the definition of a preposition.

He may also be taught that the preposition with the noun following it modifies some preceding word; as, drops *of rain*, flashes *of lightning*.

Suggestions.—1. Let the pupils be required to point out prepositions in given sentences.

2. Let the pupils show what each phrase, consisting of the preposition and its object, modifies.

3. Let sentences be written in which the preposition is omitted for the pupil to supply.

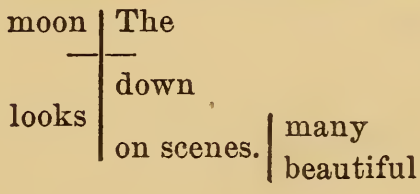
4. Let nouns or verbs be given as below, to which the pupils may add proper modifying phrases:

Days	of sunlight.	—— flies	over the house.
	of pleasure.		into the window.
	of peace.		from the tree.
	of plenty.		in the air.
	of misery.		along the stream.

5. Let the pupil substitute phrases for adjective modifiers in a number of sentences; as, *marble* steps = steps *of marble.*

6. Let the pupils be exercised in changing phrases to single words; as, men *of wisdom* = *wise* men.

7. In written analysis let the preposition and its object be written together, as in the following sentence: "The moon looks down on many beautiful scenes."



8. Let the pupils be required to construct sentences containing *in, into, at, on, between, among,* and other prepositions.

9. Give careful drill on the correct distinction between *in* and *into, between* and *among, to* and *at.*

The Conjunction.—The Conjunction may readily be taught by writing a number of expressions on the board, as "Rats *and* mice gnaw," and leading the pupil to distinguish what word joins other words. It may be taught also by practical exercises, wherein the pupil is directed to combine expressions, as in the two sentences, "John can sing" and "Henry can sing," equivalent to "John and Henry can sing."

The pupils will readily learn that conjunctions join or connect, and they may then be taught the formal definition, and the teacher may show that phrases or sentences, as well as single words, are connected by conjunctions.

Suggestions.—1. Let pupils be required to point out

conjunctions in sentences where they connect words, and show what words are connected.

2. Let them select conjunctions connecting phrases or clauses.

3. Let the pupils supply omitted conjunctions in sentences written by the teacher.

4. Have them combine sentences so as to use conjunctions, instead of repeating the parts of sentences; as, "I can read and write," for "I can read" and "I can write."

5. Teach here the use of the comma to indicate the omission of the conjunction when a series of words, the same part of speech, follow one another.

6. Teach that when the conjunction connects two subjects, the two subjects become one, and that this is called a *compound* subject, as "*John and James* recite."

7. Teach also that when the conjunction connects two or more predicates, these predicates become one, and that this is called a *compound* predicate; as, "Girls *read, write, and play.*"

The Interjection.—In teaching the Interjection children may be led to repeat a few sentences showing emotion, and then be required to name the word in each sentence showing *joy, sadness,* etc., as in the following: "*Hurrah* for the ice-pond!" "*Alas!* my poor kitten is dead!"

The next step is to teach that these words, which show that we are glad, joyful, sad, etc., are interjections, and then the pupil may be taught the formal definition.

The pupil should be taught here that whenever an exclamation is made, as, "Oh dear!" "How cold it is!" "Pshaw!" etc., whether it consists of a single word or more, it is followed by the exclamation-point (!).

He may also be taught that when such an exclamation is a full sentence it is called an *exclamatory sentence.*

He may also be taught now that when a command or an entreaty is made the sentence expressing it is called an *imperative sentence.*

Suggestions.—1. Let the pupil point out interjections wherever found in given sentences.

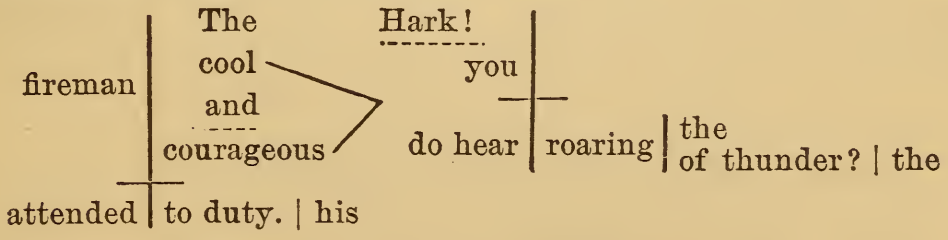
2. Let the pupil punctuate by placing the exclamation-point at the proper place in such sentences as the teacher may give.

3. Let the pupil be exercised in determining between exclamatory and imperative sentences, placing a period after the imperative sentence whenever found.

4. Let the pupil have exercise in writing the various kinds of sentences, declarative, interrogative, exclamatory, and imperative, punctuating each correctly.

5. Teach that the word O is always written as a capital letter.

6. The written analysis of sentences containing conjunctions and interjections, which never modify other words, and are never modified, may be indicated as follows, where dotted lines are placed under the conjunctions and the interjections:



7. Write sentences without any punctuation-marks or capital letters, and require the pupils to put them in proper form.

8. Give a full and thorough review of all the parts

of speech, with the rules for punctuation and capital letters, as far as taught.

Subdivisions of Parts of Speech.

It will be noticed that in all the previous lessons we have dealt with the parts of speech and such incidental instruction only as the child could fully comprehend and apply in the construction of sentences. The number of definitions has been very small, though the course indicated would cover three or four months' work.

The second general step in teaching a course of language-lessons should include the chief subdivisions of the parts of speech, together with such incidental instruction as will make the subject both interesting and practical.

The aim in a series of language-lessons should be not simply to teach the pupil to imitate models or the language of others, but to acquaint him with the principles which he employs in the construction of sentences and the use of correct speech as rapidly as he may be able to comprehend them. Any system of language-lessons that does not aim to give the pupil such culture and instruction as will make the subsequent study of grammar easier for him is radically defective.

Classes of Nouns.—The chief subdivisions of Nouns to be taught are the classes *Proper* and *Common*. Pupils may be taught that many objects have two names, as "The Delaware is a river," and that one of these is a common name which, like the word *river* above, may be given to all objects of that class.

Their attention may be called to the fact that one of these names is such as is applied to that particular object only, as the word *Delaware* above. We have, therefore, two classes of nouns. The name which belongs to all of a kind, or is *common* to all of a kind, is called a *Common Noun*, and that which belongs to a particular object only, as the word *Delaware*, is called a *Proper Noun*.

Following this, the definition of the common noun and that of the proper noun should be taught.

The following rules for capital letters should now be taught also:

1. That every proper noun should begin with a capital letter.

2. That when a proper noun consists of two or more words, as William Henry Johnson, each should begin with a capital letter.

Suggestions.—1. Let the pupil select from the reading-book or from selected sentences given by the teacher both the proper and the common nouns.

2. Let the pupils write proper nouns omitted from a number of skeleton sentences given by the teacher.

3. Give the pupils exercises in writing the proper names of objects. Thus,

Five proper names of boys;
Five proper names of girls;
Five proper names of cities;
Five proper names of rivers,
etc., etc.

See that the proper rules for the use of capital letters are applied.

Abbreviations.—At this point pupils may be taught the

rules with reference to abbreviations. They may be taught that instead of writing William Henry Adams we may write W. H. Adams, and that words thus shortened are called "abbreviations."

Teach here that every abbreviation should be followed by a period.

Caution them not to use *Mr.* and *Esq.* with the same name at the same time.

Teach also that abbreviations of proper names, when single letters, are always capitals.

Teach that the names of the months, the days of the week, and important events, but not the seasons, all begin with capital letters.

Teach the abbreviation of the names of the months and the days of the week; also such abbreviations as *A. D.*, *A. M.*, *B. C.*, *M.*, *M. D.*, *P. M.*, *P. O.*, *R. R.*, *U. S.*, etc.

Suggestions.—1. Let pupils abbreviate such names as they are familiar with; as, George Washington Adams, Henry Clay Peters, etc.

2. Let them write their own names and the names of their associates properly abbreviated.

3. Teach them to write the abbreviations of their own county and State and the different States of the Union; also the different counties of their own State.

4. Teach that abbreviations often consist of more than one letter; as, *Dr.* for *Doctor*, *Capt.* for *Captain*, *Cr.* for *Credit*, etc.

5. Give them a list of thirty or more of the most common abbreviations, placing them on the blackboard, and having the pupils copy them in manuscript books for future reference.

6. Give them frequent exercises in abbreviating and punctuating properly the titles, etc. which you have taught to them.

7. Give your pupils frequent exercises in writing the days of the week, the months of the year, and important events.

Classes of Verbs.—The two chief classes of Verbs to be taught are the *Transitive* and the *Intransitive.* It is necessary to teach the distinction between the two, because the transitive verb is the only one which is followed by an objective modifier.

The Transitive Verb.—In teaching the transitive verb a sentence like the following, "Cats can catch mice," may be taken. The pupil points out the verb, and he is led to see that the verb is followed by a noun; also that if the noun be removed the sentence will not make sense. He may then be taught that a verb which does not make sense without placing a noun or a pronoun after it, or which represents an action as passing from one object to another, is a *Transitive* Verb.

He may be taught also that when a verb makes sense without an object, as in the sentence, "Ice melts," or when no action is represented as passing from one object to another, the verb is *Intransitive.*

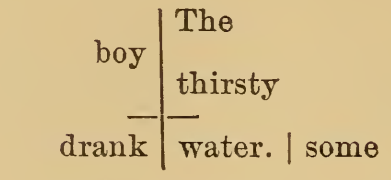
Suggestions.—1. Let the verbs in certain sentences be omitted, and require the pupils to insert transitive verbs.

2. In a similar way let the pupil be required to insert intransitive verbs.

3. Have pupils select the verbs in given sentences and tell whether they are transitive or intransitive, and why.

4. Have easy sentences containing transitive verbs

analyzed orally and in writing. Let the written form be as follows:



5. Teach that the modifiers of intransitive verbs are *adverbial*, and that the modifiers of transitive verbs are either *adverbial* or *objective*.

6. Let the pupils be required to write a number of objective modifiers in given sentences.

7. Let the pupils be required to write adverbial modifiers where omitted in given sentences.

Classes of Adjectives.—The two chief classes of Adjectives to be taught in connection with language-lessons are the *Qualifying* and the *Limiting*.

The learner may be taught that any adjective that names a quality, as *good*, *bad*, *wise*, *old*, etc., is called a *Qualifying Adjective;* also, that when an adjective does not name a quality it is called a *Limiting Adjective*. He may be taught that to this class belong numeral adjectives, articles, and pronominal adjectives, each of which the teacher should carefully explain.

Suggestions.—1. Let the pupil select qualifying adjectives from given sentences.

2. Let the pupil select limiting adjectives from given sentences.

3. Let the pupil select adjectives and tell whether they are limiting or qualifying, and why.

4. Let the pupil be required to write appropriate adjectives before given words, and tell whether they are limiting or qualifying.

5. After having taught that *4th*, *7th*, *2d*, etc. are not properly abbreviations, and that they should not be followed by periods, give the pupils exercises in writing similar expressions; as, June 17th, 1864.

6. Teach the use of *this* and *that* in the singular, with their corresponding plurals *these* and *those*, giving sentences for correction, and asking for original sentences in which the words are correctly used.

7. Teach the correct use of *either* and *neither* in speaking of *two*, and of *any* and *none* in speaking of more than two. Give the pupil practice in the correction of sentences containing these words used improperly. Also, require original sentences in which the words are properly used.

8. Teach that any adjective made from a proper noun is a *proper adjective*, and that it should begin with a capital letter.

9. Have pupils construct proper adjectives from given proper nouns; as, America, France, etc.

10. Have pupils write the nouns from which given proper adjectives, as Grecian, Chinese, Mosaic, etc., are constructed.

11. Have pupils write adjectives derived from given names; as, *fear*, *fearful*, *fearless*.

12. Let pupils name the nouns from which certain adjectives are formed; as, *heroic*, *hero*.

13. Let the pupils give definitions of *qualifying*, *limiting*, *numeral*, *pronominal*, and *proper adjectives*.

Classes of Pronouns.—The chief Pronouns to be taught at this stage are the *Personal*, the *Relative*, and the *Interrogative*.

Pupils may be taught that such pronouns as show by their form whether the person which they represent is the person speaking, the person spoken to, or the person or the thing spoken of, are called *Personal Pronouns.*

They may be taught at this point that all names applied to the Deity, as *God, Lord, Almighty*, etc., as well as the personal pronouns which represent them (when emphasized), begin with capital letters.

In teaching the *Relative Pronoun* the pupil may be required to copy four declarative sentences in which the words *who, which, what,* and *that* are correctly used.

By means of these sentences the pupils may be taught also that *who* is used in speaking of persons, *which* in speaking of animals and things without life, *what* in speaking of things, and *that* in speaking of persons, animals, or things.

Suggestions.—1. Let the pupils be required to select personal pronouns from given sentences.

2. After having taught that the relative pronouns are *who, which, what,* and *that,* let pupils name the relatives in given sentences.

3. Give sentences in which the relative pronoun is omitted, and have the pupil supply the omission.

4. Have the pupil write a number of sentences, five or more, in which the relative pronoun *who* is used correctly; also, a number in which each of the other relative pronouns is correctly used.

5. Let the pupils be exercised in the correction of sentences in which the relatives are improperly used. Select as many of these sentences as possible from the conversation of the pupils themselves. This will make them both careful and critical in the use of language.

In teaching the *Interrogative Pronoun* show that there are but three, and that they are used only to ask questions.

Call the pupil's attention to the punctuation-mark at the close of every sentence beginning with an interrogative pronoun.

Suggestions.—1. Have the pupils select the interrogative pronouns from given sentences.

2. Let them supply omissions in interrogative sentences with the proper pronouns.

General Exercises.—1. Let pupils be required to select any pronouns they may find in sentences, and tell whether they are personal, relative, or interrogative.

2. Let pupils be required to supply omitted pronouns in given sentences, and tell the class to which the word supplied belongs.

3. Let pupils be exercised in constructing sentences incorporating a certain pronoun, as *who* or *which*, and show where it is used as an interrogative and where as a relative, and why.

4. Let the pupils commit the definitions of the classes of pronouns, explain them, and illustrate them with original sentences.

Classes of Adverbs.—In teaching the classes of Adverbs the pupils may first be led to see that certain adverbs answer the question *When?* others the question *Where?* etc. They may then be taught that those which answer the question *When?* are called adverbs of *Time;* those which answer the question *Where?* adverbs of *Place;* those which answer the question *How much?* adverbs of *Degree;* those which answer the question *Why?*

adverbs of *Cause;* and those which answer the question *How?* adverbs of *Manner.*

The pupils should then be required to select adverbs from given sentences, and name the class to which each belongs.

The pupil may be taught at this point also that some adverbs not only modify other words, but also connect clauses, and that such adverbs are called *Conjunctive Adverbs.*

Suggestions.—1. Let pupils be required to incorporate certain given adverbs in sentences of their own construction.

2. Let pupils be required to write an adverb of any class as called for by the teacher.

3. Have pupils select the conjunctive adverbs in given sentences, and show what they modify and what they connect.

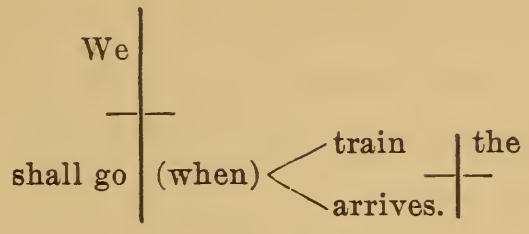
4. Have the pupils write subordinate clauses to modify given clauses with which they are connected by conjunctive adverbs.

5. Have the pupils form adverbs from given adjectives.

6. Let pupils rewrite given sentences, so that the idea expressed by an adjective may be expressed by an adverb instead; as, "He is a *slow* speaker"="He speaks *slowly.*"

7. Let pupils rewrite sentences in such a way that the idea expressed by an adverb may be expressed by an adjective instead; as, "John walks *gracefully*"="John is a graceful walker."

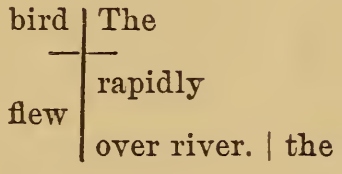
8. The conjunctive adverb in written analysis may be indicated by parentheses, as in the following sentence: "We shall go when the train arrives."



9. Pupils may be taught at this point that sometimes a phrase consisting of a preposition and its object is used instead of an adverb.

Let the pupil select or write such phrases as indicate time, place, degree, cause, manner.

In writing the analysis let the preposition and its object be placed together, as follows: "The bird flew rapidly over the river."



10. Teach that *independent adverbs* are such as have the form of adverbs, but do not modify any other word, as the words *well* and *yes* in the following sentences:

1. *Well*, this is strange.
2. *Yes*, I shall hear from him.

Let the pupils name independent adverbs in given sentences: also, have them construct original sentences containing independent adverbs.

Classes of Conjunctions.—The two classes of conjunctions to be taught are *Co-ordinate* and *Subordinate*. Their difference is best shown by the use of sentences; as,

1. I will come, *and* you may return.
2. I will come *if* you return.

In the first sentence the pupils may be taught that the

two statements connected by *and* are independent of each other, and that either may be used without the other. In the second sentence they may be taught that one statement *depends upon* the other.

They may also be taught that statements independent of each other are connected by *co-ordinate conjunctions*, while dependent or modifying clauses are connected by *subordinate conjunctions*.

Suggestions.—1. Let the pupils say whether the statements connected by conjunctions in given sentences are dependent or independent.

2. Have them point out conjunctions and state whether they are co-ordinate or subordinate.

3. Have them supply omitted conjunctions in given sentences, and tell the class.

4. Let them write a number of sentences containing co-ordinate conjunctions.

5. Let them write a number of sentences containing subordinate conjunctions.

6. Teach that certain conjunctions are used in pairs, and that these are called *correlative conjunctions*.

Show a few of the most important correlatives, as, *neither . . . nor*, *either . . . or*, *both . . . and*, *if . . . then*, *whether . . . or*.

7. Teach the caution with regard to the use of *either* with *or*, and *neither* with *nor*.

Let the pupils correct sentences in which these correlatives are incorrectly used.

General Exercises.

1. Review by defining all parts of speech.
2. Review by defining the classes of parts of speech.

3. Exercise pupils in selections of both prose and poetry, and have them name not only the part of speech, but also the subdivision or class.

4. Review all the rules learned for the use of capital letters.

5. Review the punctuation-marks as far as learned.

6. Apply the foregoing rules in practical exercises.

Modifications of the Parts of Speech.

Having taught the parts of speech and the chief classes into which they are divided, together with the practical use of English, the third step in connection with the teaching of language-lessons is that of familiarizing the learner with the modifications of the parts of speech, and the use of such principles in practice as the children may be able to comprehend.

Modifications of Nouns and Pronouns.—In connection with nouns and pronouns it is necessary to teach *Number*, *Person*, *Gender*, and *Case*.

Number.—In teaching Number the chief point is to lead the child to distinguish between the forms of words which indicate one or more than one. This is best done by showing that when we say *boy* we mean *one boy*, but that when we say *boys* we mean more than one. The child readily sees that the only change in the word in order to make it signify more than one is the addition of the *s*.

Suggestion.—Let the pupil now be exercised on a number of words and tell whether one is meant or more than one in each case.

Explain the meaning and use of the words *singular* and *plural*.

Show how words form their plural regularly; show also how the plural of words ending in *s*, *x*, *z*, *ch*, *sh* is formed.

Suggestions.—1. Let the pupils tell whether given words are singular or plural.

2. Have them write the plurals of given singular forms.

3. Have them write the singular of given plural forms.

Teach the methods of forming plurals of nouns ending in *y;* also *o;* also *f* or *fe.* Teach also the most important irregular plurals; as, *oxen*, *men*, etc.

Suggestions.—1. Have pupils write the plurals of given singular forms, both regular and irregular.

2. Have them write also the singular of given plural forms, both regular and irregular.

Teach that in compound nouns the word which names the object is made plural, as black*boards*, goose-*quills*.

Suggestion.—Let pupils write the plurals of given singular compound forms.

Person.—In teaching Person show that nouns or pronouns may denote the person *speaking*, the person *spoken to*, or the person or the thing *spoken of*. To teach that a noun representing the speaker is in the first person, that one representing the person spoken to is in the second person, etc., is a matter of but little difficulty.

Suggestions.—1. Let the pupil be required to select nouns and pronouns from given sentences, and name the person of each.

2. Let the pupils be required to write a certain number of original sentences in which the nouns and the

pronouns are used correctly according to such person as the teacher may direct or require.

Gender.—Pupils may be taught readily that animals are divided into male and female; we thus have two sexes. They may also be taught that we have two words, *masculine* which denotes the names of males, and *feminine* which denotes the names of females.

Their attention may then be directed to the fact that some objects are neither male nor female, and therefore have no sex. Nouns which indicate the names of these objects, as *book*, *chair*, etc., we therefore say are in the *neuter* gender. In a similar manner, the child may be led to apply the term *common gender* to such nouns as represent objects whose sex cannot be determined by the form of the word, such as *neighbor*, *parent*, or *friend*.

Suggestions.—1. Pupils should first be required to name the gender of a large number of nouns the names of familiar objects.

2. They should be required to give the feminine form for a number of given nouns in the masculine.

3. They should be required to give the masculine form for a number of given nouns in the feminine.

4. They should be required to write sentences containing a noun of any required gender, or each sentence containing several nouns of different genders.

These exercises should be continued until there is no possible danger of the pupils' mistaking any one gender for another.

Case.—Case is one of the most difficult parts of grammar to teach to the beginner. Much ingenuity is required

to present the subject in such a way as will permit the pupil to grasp it readily.

It may be explained to pupils that the relation which a noun or a pronoun bears to other words is called Case. Thus, when it is used as the subject of a sentence it is said to be in the *Nominative Case;* when it denotes ownership or possession, in the *Possessive Case;* and when it is used after a preposition or a transitive verb to answer the question *Whom?* or *What?* it is said to be in the *Objective Case.*

Having learned so much, the pupil may be taught not only the definition of case, but also of each of the several cases.

So far as language-lessons are concerned, the important thing to be learned is the use of the possessive case, and how to write it.

The pupil may be taught that when a noun denotes possession, something is added to the usual form. Thus, we may ask, "Whose box is this?" The answer will be not, "The boy box," but "The boy's box." The child distinguishes readily by the sound that something has been added to the word *boy* to make it *boy's.*

The next point is to show the pupil that the possessive form of most nouns in the singular is written by adding an apostrophe and the letter *s* ('*s*) to the nominative form.

The teacher should then place a number of possessive forms on the board as the pupils dictate.

A second exercise may consist of practice-work for the pupils, in which a number of words are dictated to them, and of which they are required to write the possessive form.

They may next be taught that where the nominative form ends in *s*, as in most plurals, the apostrophe alone is added.

They may be taught also that where the plural does not end in *s*, the apostrophe and the *s* are both added.

Suggestions.—1. The teacher should illustrate fully on the blackboard.

2. The teacher should write plurals on the blackboard, he selecting the nouns, and the pupils dictating as to the proper method of writing the possessive form.

3. Pupils may be required to prepare at their seats and write on the board during recitation a number of possessive forms of words dictated by the teacher at a preceding lesson-period.

4. Pupils should be required to write both the singular and the plural possessive forms of given nouns.

5. Let them be required also to change singular possessive forms to plural possessives, and plural possessives to singular possessives.

6. Review *Case* by requiring pupils to select nouns from any given paragraph or stanza and name the case of each.

Some of the more simple *cautions* relative to the use of the possessive form may also be taught at this stage, as—

1. In writing the possessive of nouns always add the possessive sign to the nominative form.

2. When several possessives limit the same noun or show joint ownership add the possessive sign to the last possessive only.

3. When several possessives denote separate ownership add the possessive sign to each.

These cautions should of course be illustrated and

explained by the teacher, after which the pupils should have frequent exercises in writing the forms correctly and in correcting such improper forms as may be presented to their notice.

The possessive, being an adjective element, is written to the right of the noun which it modifies, as follows:

	Mary's
rabbits	
	little
—	—
are	in garden. | the

Case of Pronouns.—In Pronouns the teacher should show that each case has its own form, as, *he, his, him,* and after the pupils have become somewhat familiar with these forms he should give them plentiful exercise in requiring them to write each form as it may be called for.

It would be well also to teach the following cautions, giving the pupils constant practice both in writing correct sentences and in having them correct any incorrect expressions with which they may meet. It is only by this constant practice in writing and criticism that they finally become critical in their use of language and learn to write with ease:

Cautions.—1. Do not use the apostrophe in writing the possessive case of pronouns.

2. Do not use the objective form for the subject or the attribute of a sentence.

3. Do not use *who* in the objective case.

4. In the singular number use the second person before the third, and the third before the first.

5. Do not use a pronoun and its antecedent as the subject of the same sentence.

Other important cautions may be added, the teacher being careful that they are such as the pupil can comprehend, and explaining and illustrating them in such a way as will enable the pupil to understand them.

These exercises should be followed by such as require the pupil to select pronouns in given sentences, and name the person, number, gender, and case of each.

Comparison of Adjectives.—In connection with *Adjectives* it is necessary to teach Comparison, the chief object of which is to teach pupils how to write the different forms by which they express the various degrees of quality.

It is best to begin with such sentences and forms as the pupils, from their own use of languge, know to be correct. Thus, the teacher may write on the board three sentences in which the words *large*, *small*, *good*, or any other familiar adjective, is properly used, to show the different degrees of quality.

He should then, by properly-directed questions, lead them to name the three degrees represented by other familiar adjectives.

He may also show how the comparative and the superlative degree are usually formed, both in monosyllables and in polysyllables.

Suggestions.—1. Let the pupils form the comparative of such familiar adjectives as may be dictated by the teacher.

2. Let the pupils be required to form the superlative of such adjectives as may be dictated by the teacher.

3. Let the pupils be required to write both the comparative and the superlative form of given adjectives.

4. Let the pupils select adjectives from given para-

graphs, and name the degree of comparison expressed by each.

In this connection the teacher should teach the following cautions, and give plentiful exercises, as urged heretofore:

Cautions.—1. Use the comparative degree when two objects are compared.

2. Use the superlative degree when more than two objects are compared.

3. Do not use two signs of the comparative or the superlative.

4. Do not use the word *here* after *this* or *that.*

5. When a numeral adjective means more than one, always put a plural noun after it.

6. Do not use *them* for *those* in limiting a noun.

7. Do not use adverbs for adjectives.

Of course but a single caution should be taught at a time, and the teacher should be careful to see that pupils both understand the cautions and apply them properly.

Properties of Verbs.—Since transitive verbs may represent the subject of the sentence either as acting or as being acted upon, they have the property known as Voice. In order to show the difference between the active and the passive voice a sentence like the following, "The man shot a bird," may be taken. In this sentence the subject *man* is represented as acting. We may express the same idea by making *bird* the subject of the sentence; thus, "A bird was shot by the man." In this sentence the subject *bird* is represented as being acted upon or as receiving the action.

The child may then be taught that where the subject

is represented as acting the verb is said to be in the *Active Voice*, and that where the subject is represented as receiving the action the verb is said to be in the *Passive Voice*.

Suggestions.—1. The pupil should be required to transpose a number of sentences so as to change the active to the passive voice; also, a number so as to change the passive voice to the active.

2. Let pupils be required to select transitive verbs in sentences, name the voice, whether active or passive, and then rewrite the sentences so as to change the voice.

Mode.—In teaching Mode pupils may be taught that there are several ways or *modes* in which an assertion may be made.

Thus, we may say, "Mary sings," in which we simply indicate a fact or express an assertion.

We may also say, "Mary can sing," in which we assert her power to sing.

We may also say, "Mary, sing," in which we express a command or an invitation.

Or we may say, "If Mary sing we shall be pleased," in which case we imply a doubt or a contingency.

We may also use the verb without any subject, as, "To sing is pleasant."

These five different manners of expressing thought are called *Modes*.

The pupil should now be taught the names of these modes, and as rapidly as each is taught the pupils should have exercise not only in selecting verbs of the mode taught, but also in changing the sentences from one form to another, so as to indicate the difference and show that they understand. Thus, if the pupil have learned the

indicative and the potential, let him be required to change the sentence from the indicative to the potential, and from the potential to the indicative.

In a similar way, let him be required to change from the imperative to the subjunctive or the potential, or from any one mode to any or all of the others. This practice will acquaint him with the different modes of expression much more readily than all the conjugations he could ever be taught.

Tense.—In teaching Tense the teacher should show by a simple sentence or expression that an action may have taken place in the *past*, that it may take place at the *present time*, or that it may take place in the *future*. He may also teach that the property of the verb which shows when an action or event occurs is called *Tense*.

Suggestion.—The only exercise necessary here is to have pupils distinguish, when a sentence is read to them, as to whether the action represented is *past*, *present*, or *future*.

The second step is to show that as we have three kinds of time, *past*, *present*, and *future;* and as an action may be represented as *going on* or as *completed* at any of these times, we have twice *three*, or *six*, *tenses*, two in each division of time. After having been taught the tenses and their names, particularly those of the indicative mode, it will be found an excellent exercise to have the pupils construct sentences representing the different tenses, somewhat as follows:

I teach ———, *Present*, going on.
I have taught ———, *Present Perfect*, completed.
I taught ———, *Past*, going on.

I had taught ———, *Past Perfect*, completed.
I shall teach ———, *Future*, going on.
I shall have taught ———, *Future Perfect*, completed.

Suggestions.—1. Pupils should also be required to change from one tense to another. It is a surprising fact that few persons, even at present, use the past perfect tense of the indicative correctly.

2. The tenses in the other modes need not be taught at this time. Indeed, even those in the indicative may be omitted until the pupil takes up the more advanced part of grammar, when he will be enabled to study the subject of tense more intelligently.

Number of Verbs.—Pupils should be taught that the verb changes its form according to the Number of the subject of the sentence. This may readily be illustrated to them by the use of sentences like, "The man sings," "The men sing." Pupils will at once detect the change in form.

Pupils may be taught the following cautions at this stage of advancement:

Cautions.—1. When a verb has two or more subjects referring to different things and connected by *and*, it should have the plural form.

2. When a verb has two or more subjects in the singular connected by *and*, but referring to the same person or thing, it should have the singular form.

3. When two or more singular subjects are preceded by *each*, *every*, or *no*, the verb must be in the singular number.

4. Use the present tense to express anything that is always true or untrue.

5. Use *shall* in the first person to foretell or express what will take place.

6. Use *will* in the first person to express a promise or a resolution.

The cautions with regard to subjects connected by *or* or *nor*, and those with reference to subjects when collective nouns, may also be taught at this stage.

Suggestions.—1. Give the pupils exercises in changing sentences from the singular to the plural form. Require them also to write original sentences incorporating given verbs, and name the number of each.

2. Give plentiful exercises in the correction of errors.

Person.—In teaching the Person of verbs it is necessary to teach only that the first person singular of the verb always has the same form as the plural.

Participles.—In teaching Participles, which are only forms of the verb, it may be shown that there are words which partake partly of the nature of verbs and partly of the nature of adjectives; thus, in the sentence, "The boy running down the hill is my brother," the word *running* shows action, and therefore has the nature of a *verb;* it also limits the noun boy, showing which boy is meant, and therefore partakes of the nature of an *adjective.* Pupils may be taught that all such words are called *participles.*

They should be taught here also that when the participle is placed before the noun which it limits it becomes a participial adjective, as in the sentence, "The *running* brook flows to the river."

Suggestions.—1. Let pupils be required to select

participles from given sentences, also participial adjectives.

2. Let them rewrite sentences, changing participles to participial adjectives and participial adjectives to participles.

3. Let pupils compose sentences containing either participles or participial adjectives as the teacher may require.

Regular and Irregular Verbs.—Pupils may readily be taught the difference between Regular and Irregular Verbs by the teacher's writing verbs on the board in two columns, and showing that those of one column form their past tense regularly by adding *ed* to the form of the present, and that the others do not.

They may then be taught that those which form their past tense and their perfect participle by the addition of *ed* are called *regular* verbs, and that the others are called *irregular*.

Suggestions.—1. Pupils will be able to detect the perfect participle by its making sense with the word *have* placed before it.

2. Let the pupils write a number of verbs by expressing the present tense, the past tense, and the perfect participle. Thus:

walk,	walked,	(have) walked.
sing,	sang,	(have) sung.
	etc., etc., etc.	

3. Let the pupils tell which of these are regular and which irregular verbs.

4. Let them select the regular verbs from the irregular

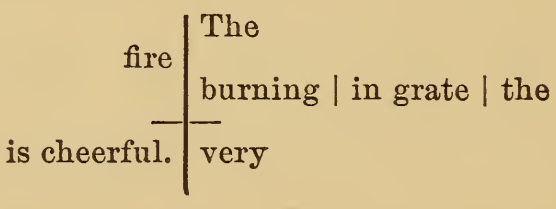
from a number dictated by the teacher, and write in separate columns.

The following cautions may be taught here, with proper explanations, illustrations, and exercises:

Cautions.—1. Do not use the past tense with the verbs *have* or *be* in the different modes and tenses.

2. Do not use the perfect participle to express past time.

In writing the analysis of sentences containing participles place the participle to the right of the noun which it modifies, thus in the sentence, "The fire burning in the grate is very cheerful."



Properties of Adverbs.—Pupils may be taught the comparison of adverbs in the same manner as the comparison of adjectives, to which the reader is referred.

Suggestions.—1. Let the pupils be required to write the degrees of comparison of such adverbs as the teacher may dictate.

2. Let them select adverbs from given sentences, and name the degree of comparison indicated.

The following cautions may be taught in this connection, being fully explained, illustrated, etc., as suggested heretofore:

Cautions.—1. Do not use adjectives for adverbs.

2. Do not use two negatives to express negation.

3. So place the adverbs in a sentence as to show clearly what they modify.

4. Do not place an adverb between the parts of an infinitive.

Prepositions.—In reviewing Prepositions let the pupils be directed to show what words they show relation between.

Teach the following

Caution.—Do not use the nominative form as the object of a preposition.

Conjunctions.—In reviewing Conjunctions require the pupils to show what they connect.

Teach the following

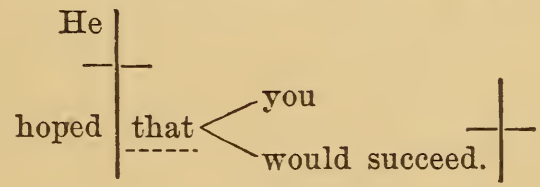
Cautions.—1. Use *than* after *else*, *other*, *rather*, and words in the comparative degree.

2. When you wish to express equality use *as* and *as*.

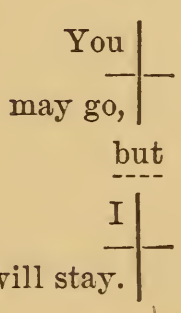
3. When you wish to deny equality use *so* and *as*.

Write the conjunction in written analysis by placing dotted lines beneath, as in the following:

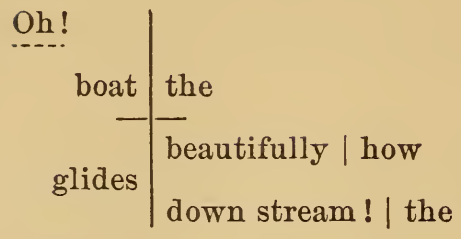
(1.)



(2.)



Interjections.—In writing the analysis of sentences containing interjections, which have no grammatical relation, place dotted lines beneath the independent words, as in the following:



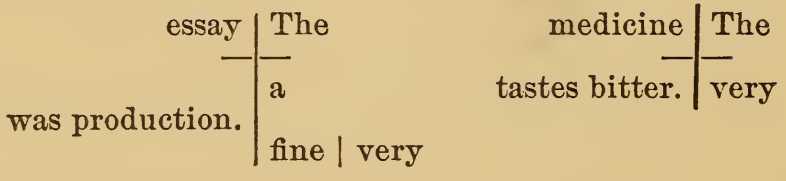
Attribute and Copula.—It is best at this stage of the child's progress to show that sometimes the predicate of a sentence consists of a verb and a noun or a verb and an adjective, and that in such cases the verb is called the *Copula*, and the noun or the adjective the *Attribute*.

The child should be taught also that in such cases the copula is an intransitive verb, or a transitive verb in the passive voice.

Suggestions.—1. Let the pupils name the predicates in properly-selected sentences, and name both copula and attribute.

2. Give them exercises in writing the analysis of sentences containing attributes.

3. Direct the pupil to write the copula and the attribute together as one predicate, as follows:



Teach the following

Caution.—Do not use the objective form of a pronoun as the attribute of a sentence.

III. General Suggestions on Language-Culture.

The following suggestions will be of use to those who desire to secure the best results of language-culture in a systematic way:

1. **Have Pupils Copy Reading-Lessons.**—This will not

only give them practice in the use of the pencil, but it will also train to close observation and give them practical training in the use of capital letters and punctuation-marks.

2. **Have the Pupils Copy from the Blackboard.**—In this case the teacher may write a short description, but better a short story, on the blackboard. The pupils may then be required to copy it. This exercise may be continued for some time, but care must be taken that the pupils copy accurately and that they be made critical and correct in their work.

3. **Have the Pupils Copy while the Teacher Reads.**—This is more difficult than the last, for the reason that the pupil must now spell without the teacher's example from which to copy, and the exercise may be made still more difficult by the teacher's making no suggestions or explanations with reference to punctuation-marks.

4. **Have the Pupils Reproduce.**—In this exercise, while the teacher reads or relates a story to the pupils, they give close attention, and after he has finished they proceed to write out the story as nearly as possible in the manner in which it was related. The exercise may be varied by the teacher's postponing the reproduction until the next day, or by giving the pupils permission to rewrite the story at any time before the next language-recitation.

5. **Let Pupils Write Letters as Soon as they can Express Themselves.**—This is not only a practical exercise, but it is also one in which pupils will take great interest. These letters may be written to one another, to the teacher, to a pet bird or a pet dog as if these could appreciate what is said to them.

IV. Grammatical Analysis.

Grammatical Analysis has been taught in some of our best schools for more than a quarter of a century, but there are still many schools into which the subject has not been introduced.

The importance of grammatical analysis has hardly been appreciated by some teachers, from the fact that their knowledge of grammar has been very meagre; but where it has become a part of the regular course of study analysis has done much to give the student a clearer conception of the subject of grammar and the ends to be gained by the study of English. The close, accurate habits of thought engendered by the critical analysis of the English sentence is of almost incalculable value to the learner in giving to him training of judgment.

Written Analysis.—Written analysis, sometimes known as "diagramming," has its use in the study of grammar. Unfortunately, however, those who have made a hobby of written analysis have claimed for it too much, and those who have not clearly understood the object of written analysis have raised objections to the system because they supposed the purpose of diagramming to be that of conveying an abstract idea to the child's mind through the pictured form.

Written analysis bears much the same relation to the subject of grammatical analysis proper as written work on the board by means of figures and symbols bears to the practical work of arithmetic, or the diagrams, equations, etc. placed on the board bear to the demonstration of propositions in geometry.

It ought not to be claimed that one can write the analysis of a sentence who cannot analyze the sentence orally, any more than one can solve a problem with chalk on the blackboard who does not in his mind at the same time perform all the mathematical work that he indicates on the board, or draw the diagram, write out the equations, etc., of a geometrical demonstration without being able to give that demonstration orally also. But who objects to the symbols in arithmetic, algebra, or geometry? Yet their use is analogous to that of written analysis in grammar.

Written analysis, whether called diagramming or outlining, is simply a pictured form placed before the eye to indicate the relations of the different parts of a sentence.

Its Use.—The chief use of written analysis is not to teach the child to analyze, but to save labor. This it does by presenting the sentence in such a form that the teacher and the other members of the class can detect at a glance whether or not the student understands clearly the relations of the different parts of the sentence. A teacher in examining the work of the pupils can determine its correctness or incorrectness in one-tenth of the time usually employed.

Written Analysis Economizes Time.—It does this by allowing every member of the class to analyze a large proportion of the lesson, where by oral analysis alone the pupils might be able to analyze but a single sentence each. In this respect the written has the same advantage over the oral analysis as the written method of recitation in spelling has over the oral method. The teacher may place as many pupils at the blackboard as can con-

veniently be accommodated, permitting each to analyze a different sentence from the others, just as we would have each solve a different problem from those solved by other members of an arithmetic class. Each should in turn be called upon to analyze orally the sentence which he has placed on the board, and thus gain the advantages afforded by both the oral and the written analysis.

A modification of the foregoing plan consists in having a portion of the class analyze in writing while others at the recitation-seats take up the same sentences and analyze orally. In this manner each may be led to detect and correct the mistakes of others.

Written analysis is valuable from the convenience which it affords the teacher in examining the work of the pupils. At such times as the teacher desires to give his class a written examination or a written review diagramming becomes invaluable as an aid in enabling him to examine rapidly the written work of the pupils.

Oral Analysis should not be Neglected.—The tendency, when pupils are not cautioned, is for them to neglect the oral analysis and spend too large a part of the time in diagramming. The careful teacher will of course guard against this, and see that whenever a sentence is diagrammed the pupil is called upon to give the oral analysis also.

Simplicity of Diagrams.—The simpler the system of written analysis the more valuable it will be. Some systems look well upon paper which are exceedingly complex on account of the great number of characters used, and in such cases it will be found that the system of diagramming is almost as difficult to learn as the

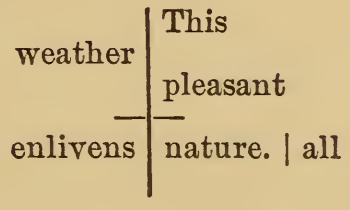
analysis of the sentences itself. Some systems are objectionable because they require words to be written either perpendicularly or obliquely, both of which are unnatural in the writing of English.

The following system is submitted for the consideration of teachers because of its simplicity, and because the words are placed in every case horizontally, as they are found in ordinary writing. The analysis of sentences by this system requires but little more time than is required to place the sentences on the blackboard.

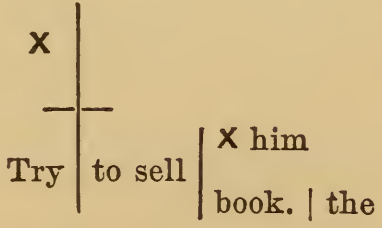
Directions.

1. Place the subject and the predicate to the left of a bisected perpendicular line, the former above and the latter below the bisecting line; thus:

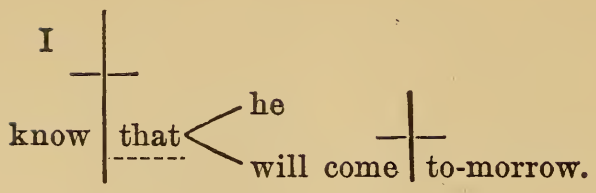
2. Place the modifiers to the *right* of the words which they modify; thus:



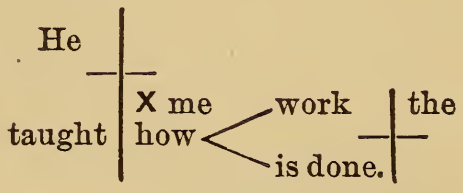
3. Words understood may be indicated by a cross (x); thus:



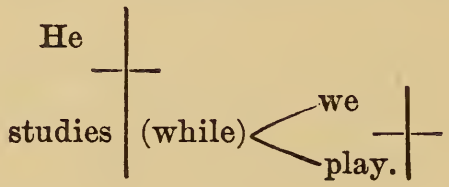
4. Place a dotted line under connectives not used to modify; thus:



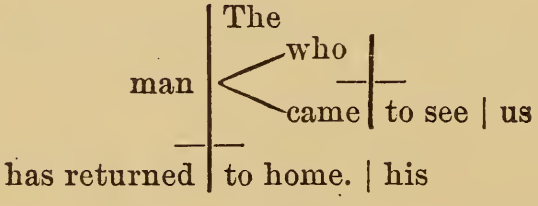
5. Write connectives which are used to modify, without the dotted line; thus:



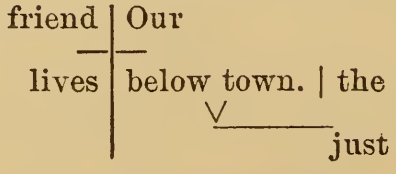
6. When a connective modifies words in two clauses enclose it in marks of parenthesis; thus:



7. Represent clause-modifiers by joining them to the words modified by a <, as in examples under directions 4, 5, 6; thus:

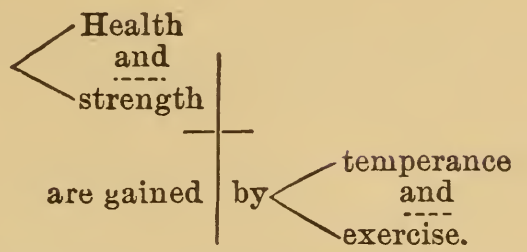


8. When a phrase is modified, join its parts by an inverted caret, and this with the modifier by a horizontal line; thus:

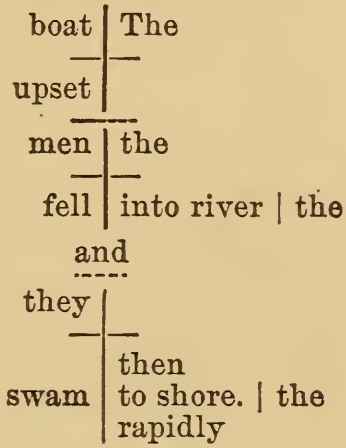


NOTE.—*The* modifies *town*, and *just* modifies the phrase *below town*.

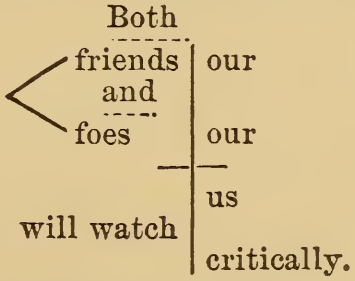
9. Join the parts of a compound element by oblique lines; thus:



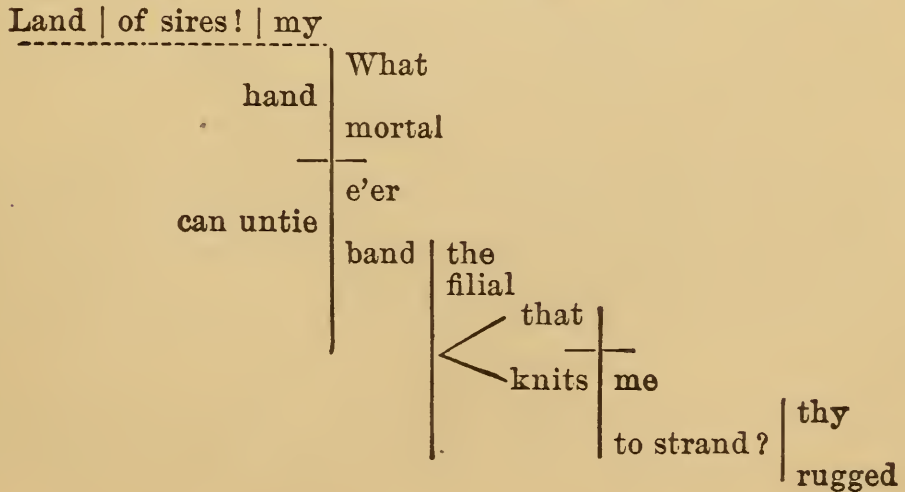
10. Separate the members of a compound sentence where the conjunction is omitted, by dotted lines; thus:



11. Place a dotted line beneath correlatives; thus:

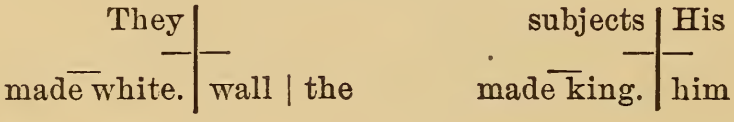


12. Place independent parts above the sentence a little to the left, with a dotted line beneath; thus:



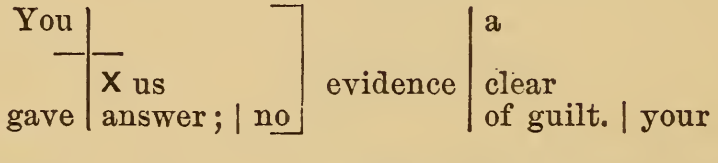
13. Place a dotted line beneath introductory or independent words, not modifiers; thus:

14. Join factitives and attributes to the predicate verb. Thus, in *factitives:*

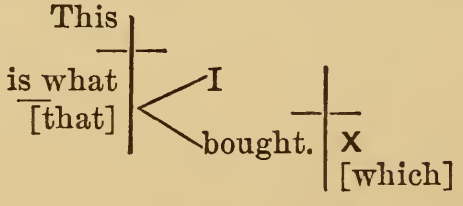


Thus, in *attributes:*

15. When a word is in apposition with a clause place a bracket after the clause; thus:



16. Where a relative is used with a double construction it may be indicated as follows: "This is what I bought."



If it is thought desirable to name the different elements, probably the simplest plan would be to mark adjective elements 1; adverbial elements, 2; and objective elements, 3.

The foregoing principles may be made to cover, it is thought, all the sentences whose construction comes un-

der the rules of English syntax. They are given here substantially as found in the author's *Practical English Grammar*.

A System of Analysis should be Simple.—The object of analysis is to train the pupil to discover the exact meaning of a sentence by determining the force of each word. This is done, to some extent, also, by parsing, but analysis is more general in its character, and deals often with groups of words instead of individuals. Thus, an adjective element may consist of a single adjective, of a noun having an adjective relation, or of a phrase or a clause performing the office of an adjective.

It is not necessary that any system of analysis, whether oral or written, should be complex or intricate in character. Indeed, the more simple the system the more readily will it be grasped and the more will the pupil be encouraged to pursue the study with eagerness. It is enough to know that elements consist of words, phrases, or clauses, without, for instance, considering them as also elements of the first, the second, or the third class.

In teaching analysis the pupil who has learned the force of any part of speech may readily be taught that a group of words may perform the same office as a single word. Thus, if it is shown that a single word, as an adjective, may limit a noun, it may be readily shown also that a phrase or a clause may perform the same office; and that if the single word be called an adjective element, the same name may be applied to the phrase or the clause; and thus also with the other elements taught. Parsing should be made to assist the pupil in determining the force of words in analysis.

Principles of Analysis.—The following simple principles may be taught as the basis of all analysis:

1. That nouns, pronouns, adjectives, verbs, and adverbs may be limited or modified.

2. That prepositions, conjunctions, interjections, and articles, as such, are never limited.

3. That adjective elements are used to limit nouns and pronouns.

4. That adverbial elements are used to limit adjectives, verbs (including participles), and adverbs.

5. That objective elements are used to limit transitive verbs in the active voice when the limiting element represents the object upon which the action terminates.

If the pupil have a thorough knowledge of the foregoing principles he need have little fear of being unable to determine what any element in a given sentence may modify. These principles are really the groundwork of all analysis.

Methods of Analysis.—The two methods of analyzing a sentence have been named the Synthetic and the Analytic.

By the *Synthetic* method, after having decided on the class and kind of sentence, the pupil names the simple subject of the chief clause, and then one by one the modifiers which limit it; then the complete or logical subject. The same plan is pursued with the analysis of the predicate.

By the *Analytic* method, after having decided upon the class and kind of sentence, the pupil names the complete or logical subject of the chief clause, then the simple or grammatical subject, then the modifiers, and after these the modifiers of the modifiers. He

proceeds in the same manner in the analysis of the predicate.

Both methods aim to accomplish the same result, the grammatical analysis of the sentence, and each has its advocates. Our choice is in favor of the analytic. Thus, in analyzing the sentence, "*When the speaker had finished the audience retired*," the analysis would be as follows:

"This is a complex declarative sentence. The principal clause is *the audience retired*, and the subordinate clause, *when the speaker had finished*. Of the principal clause *the audience* is the logical subject; the simple subject is *audience*, which is modified by the adjective element *the*. *Retired when the speaker had finished* is the logical predicate; the simple predicate is *retired*, which is modified by the adverbial element *when the speaker had finished*. Of the subordinate clause *the speaker* is the logical subject; the simple subject is *speaker*, which is modified by the adjective element *the*. The logical predicate is *had finished when*, of which *had finished* is the simple predicate, modified by the adverbial element *when* used as a conjunctive adverb."

Suggestions.—1. The first exercises in analysis should consist of very simple sentences; it is best to use only declarative sentences for a time.

2. Pupils should be taught to distinguish clearly the exact meaning of the terms used in grammatical analysis, such as "phrase," "clause," "member," "logical," "grammatical," etc.

3. Avoid the use of unnecessary terms and those which tend to confuse the mind of the learner. The simpler the analysis the better.

4. Let oral and written analysis go hand in hand.

They should be taught together; each should supplement the other.

5. See that pupils use strictly correct language in their oral analysis. If false syntax is excusable anywhere, it certainly is not in the grammar-class.

6. Make grammatical analysis the basis of logical analysis, so that pupils may study English intelligently and with the view of determining the thought of the writer.

V. Parsing.

Parsing consists in naming the part of speech, in telling its properties, and in showing its relation to other words in the sentence.

The object of parsing is mainly to train the pupil to distinguish the use of words, and thus discover the relation which words bear to one another in a sentence, as well as the force they have in modifying thought. Parsing does not enable us to speak or write more correctly, but it teaches us to understand more clearly the force of language, and thus indirectly enables us to use it with greater precision.

Parsing is valuable also as a discipline in training the pupil to verify the definitions of the various parts of speech, their subdivisions, and their properties. In this respect it is valuable also in making pupils familiar with the rules and principles of grammar from the constant review afforded.

These being the objects of parsing, it will readily be conceded that much of our teaching of grammar, and particularly of parsing, in the past, has been valueless, and therefore, to a great extent, useless.

Parsing for beginners should be very simple, consisting chiefly in naming the parts of speech and selecting given parts of speech, as suggested heretofore in connection with "Language-Lessons." As the pupil learns the classes or subdivisions of the parts of speech he may be required also to name these, and as he learns the properties he may add these also.

The Reasons.—After pupils have once learned the parts of speech, their classes, and their properties, it may be well for them to give for a time the reason for every statement until these reasons have become fully understood, when they should be gradually dropped. Thus, in parsing a noun, as in the sentence, "Mary saw her brother," let the pupil state—

Mary is a noun, it is a name;
Proper, it is the name of a particular person;
Singular number, it means but one;
Third person, it is spoken of;
Feminine gender, it is the name of a female;
Nominative case, it is used as the subject of the sentence.

When the pupil has become thoroughly familiar with the reason for each of these statements the following condensed form may be used:

Mary is a proper noun, of the singular number, third person, feminine gender; it is in the nominative case, being used as the subject of the sentence.

Brief Forms.—As pupils advance it will be found of advantage to use still more brief forms, omitting, in fact, everything except government, relation, and agreement. Thus, in the foregoing sentence with advanced classes it is necessary to say only, "Mary is a proper noun in the nominative case; it is used as the subject of the sentence."

Selected Words.—It will often prove of advantage for the teacher to select the more important or the more difficult words in the given sentences. Time may be economized in this way, and at the same time pupils will be trained to think by being led to examine the parsing exercise in order to ascertain the words which present the greatest difficulties.

Choice Literature.—With beginners it is of course wise to select such language as they can readily comprehend, but with those who have made some advancement in the study of grammar it will be found of special advantage to have them study the current literature of the day, and that which is recognized as standard and classic in our language, for the twofold purpose of acquainting themselves with choice literature and examining critically the construction of English sentences as written by the best English authors.

Written Parsing.—Written parsing has its advantages in saving time and in securing work from the whole class. Both the written and the oral form may be used in the same recitation. Pupils also, in preparing their class-work, may be profitably employed in writing out the parsing exercise.

For the convenience of those who desire to use written forms occasionally, we suggest the following, the first form being for a single part of speech, as the pronoun in the following sentence: "Let him beware, lest he deceive his own soul."

Pronouns.	Kind.	Number.	Person.	Gender.	Case.	Government.
him,	personal,	sing.,	3d.,	Mas.,	Obj.,	Object of *let.*
he,	"	"	"	"	Nom.,	Subject of *deceive.*
his,	"	"	"	"	Pos.,	Limits *soul.*

The other parts of speech may be written in a similar manner, and the teacher will find the employment not only useful, but it will be also in a measure congenial to the pupils, particularly to those who are thoughtful and desirous of learning.

The following form may be used with all parts of speech at the same time. Should the sentence prove too long for the space allotted, it may be divided and placed below, as in ordinary writing:

He is the freeman whom the truth makes free.

Pro.,	Verb,	Art.,	Noun,	Pro.,	Art.,	Noun,	Verb,	Adj.,
per.,	intr.,	*freeman.*	com.,	rel.,	*truth.*	com.,	tran.,	qual.,
3d,	indic.,		3d,	3d,		3d,	act.,	fac.,
sing.,	pres.,		sing.,	sing.,		sing.,	indic.,	*whom.*
mas.,	3d,		mas.,	mas.,		neut.,	pres.,	
nom.,	sing.,		nom.,	obj.,		nom.,	3d,	
is.	*He.*		after *is.*	*makes.*		*makes.*	sing.,	
							truth.	

Suggestions.—1. The teacher should see that his pupils understand clearly and definitely the meaning of the expressions they use in parsing, such as, "limit," "modify," "qualify," "relate to," "agree with," and similar terms.

2. Permit pupils to dispense with formal parsing occasionally, and have them point out the agreement, relation, and government only.

3. Let the pupils occasionally have a parsing-match. They become wonderfully attentive and critical under the stimulus afforded.

4. See that the pupils are careful to use none but good English in the parsing exercises; let them apply this to both their pronunciation and their syntax.

5. Give the pupils a correct form, and when they deviate from this show them wherein the error consists, and train them to avoid it.

6. Do not make a hobby of parsing; there are other parts of grammar more important than this.

7. When a written form is used insist upon neatness as well as correctness in the work; remember that the chief use of the written work is to save time and to induce each pupil to prepare the lesson properly.

Analysis and Parsing.—These are closely related, and they may readily be taught together. The old plan was to begin with the etymological part of grammar, teaching the parts of speech, their classes, modifications, etc., thoroughly, and with this unite parsing as the pupil proceeded, and then take up analysis if it was taught at all. Many at present claim that we should begin with analysis, on the ground that the sentence is the unit of thought.

A better plan than either is a union of the two: the simpler parts of analysis may be taught quite as readily as parsing, as has heretofore been indicated in the first steps of Language-Lessons. The plan of teaching subject, predicate, and modifiers, so far as the work may be conducted with beginners, has been sufficiently indicated. It presents no serious difficulties whatever, and needs no further discussion.

VI. Syntax.

The errors in the use of speech by all speakers and writers are many. Even the ablest writers now and then are guilty of violating the rules governing the construction of sentences; and as to the errors in the every-day conversation of the majority of people, they are simply innumerable. The systematic correction of the errors is based on certain rules and principles which govern the

most correct writers and speakers in their use of English. In grammar the correction of these errors is known as the *Correction of False Syntax.*

The chief object aimed at in the correction of false syntax is that of training the learner to use the language correctly. The pupil becomes critical and careful in his own use of language by correcting the mistakes of others.

The argument that we should never permit a child to correct, or even see, a false sentence is of no value, for the greatest possible care we may exercise will not prevent his seeing or hearing incorrect language every hour of his life. It is a well-known psychological law that the impression made upon the mind by any object of knowledge is all the stronger for having been placed in contrast with its opposite. The storm at sea is all the grander and the more terrible from its contrast with the peaceful calm by which it was preceded.

A secondary object in the correction of false syntax is that of making the student thoroughly acquainted with the rules and principles which govern the correct use of our language, together with their application, thus enabling him to acquire correct habits in his own use of speech.

The *selection of errors* to be corrected should, as far as possible, be made from the every-day language of the pupils. To these should be added such incorrect forms of speech as may be current in the neighborhood. Selections should be made also from the literature of the day and from the master writers of the language, for even in the writings of men of the highest literary reputation there will be found many violations of the rules governing the correct use of English. These errors must of

course not be taken as correct because made by reputable writers. They tend rather to show that even the most careful are not infallible in their use of correct language.

Correct Speech should be Taught Early.—Children learn their early use of language by imitation. If the models which they follow were invariably correct they would speak correctly as a habit, but if these models be incorrect there seems to be but one way of correcting the vicious example of those with whom they associate, and that is by making the pupils careful to use correct speech by calling their attention to their own errors and those of others, and thus making them observant and critical. The moment, therefore, that they are detected in the use of incorrect language the teacher should call attention to the mistakes, and, whenever possible, have the child correct its own errors. The important end to be secured is that of having the child use correct language from the force of habit. If we can secure this result much of the subsequent labor in training to correct speech may be avoided.

Syntax in all Branches.—Care must be exercised that pupils use good English in all their recitations. The teacher who reserves all corrections of speech for the grammar-class has but a partial appreciation of his duty. If he is cautious to correct mistakes wherever and whenever he may observe them, he will find his teaching in the subject of language very much simplified.

Method of Teaching the Principles.—It is not enough to have the pupils correct the sentences they may meet with. It is still more important that they be taught the principles which govern the use of language, and be ready to apply them both in the correction of errors and in the

construction of their own sentences. It is an excellent plan to have the pupils study a rule as a whole, and in their class-exercise write not only the rule, but also the notes and cautions appended. This plan is particularly effective in the case of those who are somewhat advanced.

Forms for Correction.—With beginners it is deemed best to allow them simply to correct the errors, without requiring any special form, though it is well to have them give a reason for their correction if the reason is known to them. With those more advanced, however, it is best to use a simple form. The following is used by many excellent teachers, and is strictly correct.

Illustration: "Them that believe in me shall be rewarded." The sentence is incorrect, because *them*, a pronoun having the objective form, is used as the subject of the proposition; the nominative form *They* should be substituted, according to *Rule I., Caution 1.*

Incorrect Forms.—Care should be taken that correct forms be used. Thus, in the foregoing illustration to say that "*Them*, a pronoun in the objective case," etc., is not correct. The case of a noun or a pronoun is determined by its relation to other words in the sentence; the word *form* should be used instead of the word *case*. Also, to quote the rule and say that "The subject of a finite verb must be in the nominative case," is incorrect, as the subject of a finite verb *is* in the nominative case, and it should have the nominative form. It is also incorrect to say, "*Them* should be changed to *They*;" rather we should say, "*They* should be substituted for *Them*," or, "The nominative form *They* should be substituted for the objective form *Them*."

Mixed Exercises.—In applying the principles of syntax it is well at times to give what may be termed "mixed exercises;" that is, those in which only some of the sentences are incorrect. This will require the pupil to apply his knowledge of the subject of syntax in determining not only which sentences are correct and which incorrect, but also how to make the proper correction.

Suggestions.—1. In teaching the rules of syntax and their application to the correction of errors see that pupils clearly understand them. Do not be satisfied with having the pupils commit to memory the rules, notes, remarks, and cautions.

2. Select a large number of sentences for correction from every-day speech, current literature, and text-books. Pupils soon learn to correct the errors found in the textbooks they use, and they often even go so far as to mark the necessary corrections the first time made, so that on review it may not require any study or thought.

3. In the correction of sentences use a form only so long as it may be necessary for the purpose of impressing on the mind the proper rule and caution. Time may often be saved by omitting the form when the pupils are once thoroughly familiar with it.

4. Encourage pupils to criticise the language of standard writers. This will make them critical and accurate in their own use of language.

5. Encourage pupils to make a note of such errors as may be heard on the playground or in the recitation-room, and have them corrected in class.

6. Use good English in the presence of your pupils, in order that they may learn to speak correctly as a habit.

Teach by Topics.—Many parts of grammar are comparatively easy to comprehend. There are, however, a few principles which present serious difficulties to a student. Among these may be named participles, infinitives, the transitive verb, factitives, restrictive and non-restrictive clauses, and the use of the possessive in certain constructions. The most profitable way of teaching these is to take up one topic at a time, and dwell on that one point until it is thoroughly understood. Other textbooks and the opinions of other teachers should be brought to bear on the mind of the learner. The teacher should illustrate the language of the book with examples selected from other sources than the textbook in use.

Pupils should be encouraged also to consult other textbooks, if available, in order to get a clearer understanding of the topic. Ample time should be given for the pupil to comprehend the exact meaning and importance of the topic taught. It is entirely safe to say that fully fifty per cent. of the teachers of the United States would fail in a thorough examination on one or more of the above-named subjects. Very many teachers do not have a clear conception of even the transitive verb, and very many more are still less certain as to their knowledge of participles and infinitives.

Technical Grammar.—By technical grammar is meant that part of grammar which deals strictly with the science itself, including the technicalities and idioms. Many have argued that technical grammar should not be taught in the public schools. But it will be noticed that every such person, though his education may have been only such as the public school affords, is always ready to

apply the principles of technical grammar in the criticism and correction of such errors as he may meet with.

While language-lessons and composition will give the pupil exercise and training in the correct construction of sentences, and train to correct speech, technical grammar is a necessity to the proper comprehension and understanding of the principles on which the practice is based. It bears the same relation to the use of language as the science of arithmetic bears to the mechanical operations in that branch of study.

Words and their Functions.—It is important to teach that words are parts of speech only as they are used in speech. Pupils frequently imbibe the notion that all words are divided into parts of speech, without relation to their use in sentences. This is an error which the teacher must be prepared to meet and correct. He should teach that the use of a word in a sentence determines what part of speech it is. Thus, the word *well* may be used as five parts of speech, as follows:

1. The well is filled with water (*noun*).
2. We are all well (*adjective*).
3. The stream seemed to well out from the rocks (*verb*).
4. Well! well! Is it possible that he could have behaved so badly? (*interjection*).
5. The lesson was well recited (*adverb*).
6. Well, let us begin (*independent adverb*).

Illustrating the Uses of Words.—It is a valuable exercise to have pupils illustrate the various uses of words. Thus, after having been taught the power and use of a word, as *well* in the above sentences, let pupils be re-

quired to write one or more sentences to illustrate each use of the word. This method of teaching should be carried through the whole grammar. For instance, in verbs something like the following might be required:

1. Write *is* as a principal verb; as, The boat is on the river.

2. Write *is* as a copulative verb; as, This apple is sweet.

3. Write *is* as an auxiliary verb; as, The boy is writing.

An exercise of this kind is valuable in training the learner to distinguish the different uses of such words as *is*, *are*, and the other verbs usually known as copulative.

Similar exercises might be given on such verbs as *ran;* as,

1. *We ran a race*, where the verb is transitive, being followed by a kindred noun.

2. *The horse ran a mile*, where the verb is intransitive, the noun following a preposition understood.

3. *The engineer ran a train*, where the verb is transitive, from its causative meaning.

4. *The brooks ran nectar*, where the verb is transitive, being used in the sense of *produced*.

VII. Suggestions on Teaching Grammar.

1. In the teaching of any department of grammar, and particularly analysis and parsing, train your pupils to be liberal-minded. Two students or two teachers may decide differently as to the construction of a sentence or the disposition of a word, and yet neither can say with certainty that the other is wrong. Each may be right

according to his understanding of the meaning to be conveyed by the author.

2. Do not train your pupils to be biased or narrow in their opinions. Teach them that many words may be disposed of in several ways, according to the meaning implied in the sentences where they are used.

3. Beware of quoting a single textbook as absolute authority. The very fact that scarcely two textbooks on grammar agree throughout is a strong argument why both teacher and pupil should consult a number of authors on disputed points.

4. Be careful to see that pupils not only understand the rules of syntax, but that they also be made expert in the application of them to the correction of errors and the construction of sentences.

5. Give special attention to the practical part of grammar, sentence-construction and the correction of sentences.

6. Give most attention to the most important parts and to those most difficult for the pupil to comprehend.

7. Do not make a hobby of any department of grammar: parsing, analysis, the correction of false syntax, practical sentence-construction,—all have their uses.

8. Shorten the work by omitting non-essentials; thus, in the declension of nouns the work may be greatly facilitated by having the pupils write the possessive singular and plural only. In conjugation much work may be saved by having the pupils give only the synopsis, writing out the first person singular in all the modes and tenses.

Variety may be secured also by having one pupil write the synopsis in the first person singular, another in the

third person plural, and so on. The teacher may also require a verb written in a certain mode, tense, person, and number. This will test the pupil's knowledge thoroughly.

9. Remember that it is constant practice that makes not only fluent speakers, but also correct ones. Expertness comes not from rules, but from practice.

10. Rise above the textbook. Be original; teach something beyond; no textbook can cover one-fifth the ground, particularly in practical exercises, that ought to be covered by a competent teacher.

CHAPTER VII.

Composition.

Composition is the art of expressing one's thoughts. The term is usually restricted, however, to the expression of connected thoughts by means of written language. These thoughts may be such as originate in one's own mind, or they may be such as have been impressed upon us through the faculty of perception.

Importance.—The importance of teaching pupils to compose or express their thoughts connectedly, correctly, and impressively cannot well be over-estimated. There is no more desirable accomplishment than the ability to express one's self elegantly and tersely in one's own language. Latin and Greek may give us valuable discipline, but the ability to write one's own language fluently and correctly should be prized much more highly than the most finished education in any foreign language, either living or dead.

I. The Advantages of Teaching Composition.

1. *It gives Valuable Culture to the Various Mental Powers,* employing not only observation, but also memory, imagination, the understanding, and even reason.

2. *It Cultivates a Literary Taste.*—The student who is taught to compose and express his own thoughts reads

eagerly the thoughts of others, partly that he may make comparisons, but partly also because he acquires a taste for literature in the very effort to express his own thoughts.

3. *It Trains the Learner to Think.*—The day has gone by when pupils were expected to write on all sorts of subjects, even such as were entirely beyond their comprehension. It is now a recognized fact that the writer must have something to say before he can say it.

4. *It gives Language-Culture.*—Nothing so much enables one to write correctly as constant practice. The best way to learn to express ourselves properly is to compose, and to record our thoughts on paper.

5. *It Creates Interest.*—We never read a paragraph so closely or with so much interest as when we expect to reproduce it; nor do we observe at any other time so closely as when we are desirous of conveying to others our observations and impressions with reference to the objects or scenes which are a part of our experience. If properly taught, composition may be made one of the most interesting of studies, as well as one of the most beneficial.

II. Methods of Teaching Composition.

Practical composition should accompany all language-lessons, though the pupil do no more than write sentences correctly. This will at least train to correct expression, and prepare the pupil to express his own thoughts properly when he comes to the work of composition proper.

The first efforts at composition should be very simple. The child should of course first have ideas to express; without these composition is not only useless, but also

impossible. Whence the child gets these ideas is a question to be settled by psychology. Suffice it to say, that every intellectual power is a part of the mental machinery which creates thought: perception, memory, imagination, understanding, reason,—all are active in the production of thought.

Oral Composition should Precede Written.—The dread of composition-writing often arises more from the name than from the actual work itself when once fully understood. Pupils may readily be trained to tell what they know about an object to be described or to relate the incidents of a journey, when they would shrink from the effort to express themselves on the same subjects if required to do so in writing.

III. The Plan.

Copying.—When a class has had no previous training in composition-writing, let them copy reading-lessons or paragraphs from such books as may be found convenient. Having exchanged their papers or slates, let them correct one another's exercises, giving special attention to spelling, capital letters, punctuation-marks, and paragraphs. While making these corrections the pupils should of course be permitted to use the open book in order to make the comparisons. This will enable pupils to do the work correctly, and at the same time save the teacher considerable time and labor.

Copying from Dictation.—This is also a valuable exercise, inasmuch as it compels the pupil to apply his knowledge of the principles and rules taught to him as he pursues his course of language-lessons. The lessons

may be graded as to difficulty; the teacher may at first name the punctuation-marks as he proceeds, also the the capital letters. Then the pupils should be made to depend upon their own knowledge as to where capital letters should be used. Lastly, the teacher should simply read, permitting the pupils to decide for themselves as to where capital letters, periods, and others of the most familiar punctuation-marks should be used. The teacher should grade these lessons according to the capacity of pupils.

Reproduction of Thought.—A third step in the work of composition-writing is that of reproducing in the child's own language a story or interesting incident related by the teacher. The teacher should be careful to select for his exercises short stories or sketches, such as the pupils can readily remember, and then change gradually to those of greater length.

After having reproduced stories or incidents for a time, the pupils should be required to reproduce descriptions; and these descriptions at first should be such as relate to objects familiar to the children, that they may reproduce intelligently by being able to add from their own stock of knowledge where memory in any sense fails.

Do not insist on a literal reproduction at first. Let it rather be an abstract only, but expressed in the child's own language, for this is the only true test as to whether the child is thinking for itself or simply memorizing and repeating words.

The exercise of reproducing thought may be varied by having pupils read a story, an incident, a description, or even an argument, and then, with books closed, reproduce

it as accurately as possible in their own language. This is an exercise which we have found valuable even in such branches as mental and moral science. Nothing is more conducive to fixing the thought in the mind than this written reproduction.

Original Composition.—The first original compositions required should be short; at least, the pupil should not be required to write more than he can express readily. These compositions should be either narrative or descriptive.

Narration.—If narration be preferred, the pupil may be permitted to select his own subject, or the teacher may assign one for the whole class. In either case the learner may be both helped and encouraged by asking him questions, so as to develop thought as well as recall that which has already been in the child's mind. This narration should consist of something entirely familiar to the child, as a sleigh-ride, a day's coasting, a game of ball, a trip to the city, a ride in the country, or something similar.

Description.—If description be selected, it would be well for the teacher to give a lesson in some of the earliest compositions on the object to be described, so as to arouse thought and at the same time convey some information. The object may be placed before the class, or the lesson may consist in describing a given object in its absence. The lesson may be varied by requiring the pupils to describe a landscape, a stream, the mountains, a city, and other objects.

The exercise in description may be varied by placing a picture before the pupils, having them study it closely and then write a description of it and the different objects portrayed. Native talent will here begin to show

itself, and those of vivid imagination will by no means restrict themselves to a literal description of what they see.

News.—A weekly or semi-monthly newspaper in the school-room is an excellent medium for composition-training. All pupils should be trained to write short news paragraphs. These afford excellent exercise in both description and narration. The news department of our papers of the day are those most eagerly read. The modern *news*paper is a recognized necessity.

Historical Sketches.—When pupils have once progressed so far as to have read history and biography, it is an admirable plan to have them condense their knowledge and reproduce it in short sketches. Thus, having read the full account of the American Revolution, let them write a sketch giving the causes, some of the most interesting incidents, and close with the results. This will not only train to accurate expression, but it will also lead to condensation of thought and more effective study.

What has been said of historical writing is equally applicable to biography. It is well sometimes to assign a subject, as Washington, Columbus, etc., with the purpose of having pupils acquire a taste for biographical study, and for the purpose of training them to reproduce in writing what they have read.

Forms.—Pupils should, as a part of the composition-exercise, be trained to write all business and other forms, such as letters of all kinds, applications for positions, notes of invitation, condolence, and congratulation, acceptances and regrets, resolutions of respect, etc., telegrams, promissory notes, drafts, checks, negotiable notes, receipts, due-bills, and other business forms.

In some institutions these are all embraced under the head of "Letter-writing," but, after all, letter-writing is but a part of practical composition.

Under the head of letters pupils should be required to write letters of various kinds—a letter to a sister, to a father or a mother, to the teacher, to a school-mate, to a friend, or even to a favorite dog or canary.

In telegrams they should be taught the necessity and importance of condensing, and yet omit no necessary words.

Analysis of the Topic.—In some of the first exercises it is best for the teacher, when he assigns the same subject to a whole class, to analyze the method of treatment in such a way that the pupils may write intelligently on the topic. After having placed this analysis on the board so that pupils may copy it or refer to it, he should ask a number of questions, so as to arouse thought in the mind of the child and thus furnish a basis for the production.

Reading Compositions.—There is much variety in the practice of teachers as to reading the compositions publicly. Some prefer to have an afternoon set apart when all may read; others take portions of several days and have but a part of the school read; while still others do not have the compositions read publicly at any time. Undoubtedly, great benefit arises from having the pupils read publicly what they have written, but teachers differ greatly in their plans. Probably as profitable a plan as any is that of having the writers read their productions in the reading-class and at the regular time assigned for that branch. Should the class be very large, so that not all may be heard in

the allotted time, a portion only of the class may be called upon, reserving the others for another occasion. The teacher should criticise posture, manner, expression, etc., the same as in the reading-class at any other time.

"Composition day" has usually been dreaded by pupils in almost all schools, and chiefly because the work of teaching composition-writing has been without system, and because pupils have written under compulsion when they had really no thoughts to express. As a consequence, pupils frequently absented themselves as composition day came round, rather than submit to the faultfinding of the teacher for their seeming negligence.

If the exercises of composition day be made general in their character, so that the interest not only of the pupils, but of the whole community, is awakened, the teacher need have little fear that compositions will be a cause of truancy. Let the day, if a general exercise is preferred, be made a literary occasion, in which declamations, music, recitations, dialogues, debates, a society or school paper, and essays shall all form features of the occasion, and composition day will be hailed as one of the pleasantest days of the term.

IV. Suggestions on Composition.

1. See that pupils have thoughts to express before they attempt to express them. The first essential is that the child has something to say on the subject selected before he attempts to write.

2. Have your pupils express their thoughts in correct language, and always in such words as they understand.

3. Do not insist that their language shall consist of monosyllables. Monosyllabic language may be strong, but language needs to be beautiful as well as strong. A judicious intermingling of words of various lengths is the most harmonious arrangement as well as the most expressive.

4. Encourage pupils to read, and then to reproduce what they have read either in newspapers or in the works of standard authors.

5. Encourage them to refer to the dictionary whenever in doubt as to the correct meaning or the proper application of a word.

6. Encourage them to read the best and most classic authors, to discover, if possible, the essentials which make their style pleasing. Reading literature of a captivating style will tend to give one power to form a pleasing style of one's own.

7. Ease of expression may be acquired by constant practice, but also by copying and memorizing the productions of the elegant writers in one's own language. We naturally imitate the style of those writings with which we are most familiar, and their methods of expression to some extent model ours.

8. Give occasional exercises in transposing poetry to prose. This will require the learner to remodel many of the sentences and express them in a different form.

9. Exercises in paraphrasing are excellent. Let the pupil take some popular proverb and write an explanation of it.

10. See that pupils do not attempt to select subjects beyond their comprehension. Encourage them to be original by having them write only on such themes as

they understand, in having them express themselves naturally, and by giving them proper praise for even their humblest efforts.

11. Encourage your pupils to correct and rewrite what they have written, and prune, until they express themselves in the best possible manner.

12. Lead your pupils to see that composition is only telling or writing what they know or think on any subject.

13. Make your composition-exercises interesting by having variety. The teacher is often able to create interest by giving a five-minute exercise; that is, by allowing the pupils five minutes' time to express themselves on a given subject.

14. Let your criticism be generous. Harsh criticism, particularly in the composition-class, tends greatly to discourage the child and disgust him with the exercise.

15. See that the compositions of your pupils are expressions of thought, and not a mere string of meaningless sentences connected by a series of conjunctions.

16. See that their sentences are not ambiguous, and that they do not violate the rules of grammar and rhetoric.

17. Let the writing be exact. Where the wrong word is used call their attention to it, and in this way aid them in discriminating accurately the nicer shades of meaning in words.

18. Teach accurately the meaning of the various classes of sentences, and show pupils the use of paragraphs and how they should begin.

19. Have your pupils write abstracts of stories they have read, also imaginary stories.

20. Give them practice in writing news events for the press, whether they be forwarded to an editor or not.

21. Have them write short scientific articles; this will both give them a review and train them to think and compose with special accuracy.

22. Let them write descriptions of imaginary voyages, in which they can employ their knowledge of geography and history.

23. When pupils in a class are not all required to write on the same theme, place a number of suitable subjects on the blackboard, and let them select from these.

24. Train them to outline or analyze the topic which they select before they begin to write on it.

25. Encourage them to think over each point in the outline carefully before they attempt to write. This will do more than anything else to lead them to think for themselves.

26. In the preparation of the more extended essays pupils should be trained to observe closely and reflect intently before giving their thoughts expression.

27. In the collection of material, pupils should read also the thoughts of others; these will arouse new thoughts in their own minds, and make their writings all the more valuable.

28. The student preparing to write should be encouraged to carry a notebook, in which he should jot down such thoughts with reference to his subject as may occur to him from time to time.

29. When once the analysis of the topic has been made, the student should select only those parts which

seem most important, and dwell on these, but without repetition of either thought or language.

30. Let the teacher by all means cultivate among his pupils a taste for good reading and pure literature. Let him give such culture to his pupils as will create in them a desire to read for themselves what is beautiful and interesting in the writings of others, and, having once secured this result, he need have little fear as to their success, not only in the department of language, but in every other department as well.

31. Remember that the daily exercise in written expression of thought is much more valuable than the formal semi-monthly compositions prepared for an occasion.

32. In the correction of compositions it is usually better simply to indicate the error than correct it; by this plan the pupil will be enabled to correct most of his own errors, and when not able to do so it will be time for the teacher to suggest the proper correction.

Some teachers prefer to indicate the sort of correction to be made, whether in spelling, capital letters, or otherwise, but in general it will be found best simply to indicate that an error has been made, and let the pupil discover it for himself.

Some of the errors may be written on the board for the class to criticise and correct. When such a plan is pursued, the teacher should never be so inconsiderate as to permit any pupil to know from whose compositions the errors have been gleaned. In general, those errors which are likely to be made by all or most of the members of the class should be placed on the board.

CHAPTER VIII.

Rhetoric.

The subject of Rhetoric is so closely allied to that of grammar, and it enters so largely into the art of elegant expression, that it is deemed best to offer a few suggestions here with reference to the most effective methods of teaching it. Writers on rhetoric differ so widely in their presentation of the subject that no definite plan can be presented which could be adapted to the textbooks now before the public, nor is it deemed advisable to present here the qualities of style, divisions of discourse, etc., that are to be found in the textbook proper.

1. **Divisions of Rhetoric.**—Most writers on rhetoric agree on dividing the subject into two chief departments, *Style* and *Invention*. Some of these discuss the subject of style first, on the ground that the transition from the rules of grammar to the rules of style is more natural for the student. Others treat of invention first, claiming that the writer must have something to say before he learns how to express his thoughts. The proper method is to teach the two together, giving practical composition-exercises in connection with the discussion of the topics.

2. Diction.—In discussing Diction do not let pupils rest satisfied with committing to memory definitions of terms. Require them also to show wherein words violate the principles of diction—purity, propriety, and precision.

Let pupils not only select words that violate these properties, but also criticise current literature and substitute proper synonyms for the violations.

A very interesting exercise is that of having the pupils write as many synonyms of a given word as possible, and then construct sentences incorporating these words in such a way as to show the various shades of meaning. Thus, the synonyms of *leave*, as *quit*, *resign*, *forsake*, *desert*, *abandon*, and *withdraw*, may be employed in sentences of the pupils' own construction. This exercise enlarges their vocabulary and makes them critical in the choice of words, while it gives them at the same time practice in composition.

Another important exercise is that of having the pupils trace the linguistic origin of words. If this were carefully attended to we should hear fewer mongrel formations, such as *walkist*, *timist*, *cablegram*, and others used by speakers and writers who claim to use reputable English.

In teaching the proper rhetorical construction of sentences see that pupils not only know how to criticise the language of others, and show how it violates the rules for clearness, unity, strength, harmony, etc., but that they also express their own thoughts in properly-constructed sentences.

3. Figures.—Inasmuch as a large portion of our speech consists of figurative language, it is desirable that the

students learn to detect readily the difference between figurative and literal expressions, and to appreciate the heightened effect gained by the use of figures of speech.

Suggestions.—1. In teaching figures see that pupils are able to select and name properly the figures in ordinary and classic discourse.

2. Have them write any required figures in original composition.

3. Let them change figurative language to plain, and plain language to figurative.

4. Give them exercises in changing one kind of figure to another, as a simile to a metaphor, or a metaphor to a simile.

5. Teach them to be careful not to multiply figures unnecessarily, and particularly not to construct mixed figures. The use of mixed figures is the most flagrant error that young and effusive writers are apt to commit.

4. Versification.—*Suggestions.*—1. Train pupils to distinguish carefully between poetry proper and versification, or the mechanical part of poetry.

2. Give frequent exercises in scanning the different varieties of poetic verse.

3. Show pupils that mere rhyme and metrical arrangement do not constitute poetry, and that not all poetry is rhyme.

4. Have pupils frequently convert poetry into prose, so that they may appreciate fully poetic license as manifested in the use of elision, figures of enallage, personification, etc.

5. Have pupils illustrate the requirements of a perfect rhyme.

6. Give them exercises in metrical composition or verse-writing, permitting them at first to select their own measure, and afterward adapting the sentiment to some measure suggested by the teacher.

5. **Prose Composition.**—*Suggestions.*—1. Teach pupils to distinguish accurately between the various forms of prose composition—reviews, essays, treatises, editorials, travels, history, biography, fiction, and discourse, including orations, addresses, lectures, and sermons.

2. Give pupils practice in writing the various forms of prose composition, requiring them to use the style properly adapted to each, and showing them wherein to condense and where to be profuse in the use of language.

3. In the writing of discourses impress upon the minds of pupils the importance of dividing the discourse symmetrically, so that it may have a proper introduction, body, and close.

6. **Punctuation.**—*Suggestions.*—1. In order to teach punctuation effectively the teacher should have a thorough knowledge of grammar, and the more extended the pupil's knowledge of that science the more readily will he be able to comprehend the principles of punctuation and apply them in practice.

2. Only the more important rules should be taught at first, such as the pupils can readily understand and apply, even though such teaching do not exhaust the rules with regard to any particular point under discussion.

3. Let pupils not only punctuate such exercises as the teacher may dictate with the proper marks omitted, but also copy and punctuate while the teacher reads.

4. Pupils should also have considerable practice in punctuating their own compositions, and be able to give the proper reason for every mark inserted.

7. Rhetorical Essays.—It is a valuable practice to have students of rhetoric write essays on the different topics studied. Thus, after having studied diction, let the whole class be required to reproduce the discussion in their own language. The exercise will afford valuable practice in composition, and at the same time serve to impress the different points more firmly on the mind.

CHAPTER IX.

English Literature.

Few studies afford so wide a scope for mental culture as does the literature of one's language. Too little attention has been given to the subject of English literature in our American schools. Much, however, may be done toward creating and cultivating a taste for literature, even in an informal way, in connection with reading and history, but it is best that a definite method be pursued.

The plan of teaching literature naturally arranges itself in three divisions, as follows: *First Steps in Literature, Studies in Literature,* and the *History of Literature.* Most of the efforts at teaching literature in the past were simply the teaching of literary biography and the history of literature, and this accounts for the fact that the results have not been satisfactory.

I. First Steps in Literature.

With beginners the two most important ends to be aimed at are to arouse an interest in literary biography and create a taste for beautiful thoughts expressed in beautiful language.

Biography.—In teaching to beginners the biography of literary men much the best plan is to teach those in-

cidents which will be likely to arrest the attention of the child. Thus, in the career of Goldsmith his travels on the Continent and his playing on his flute for supper and a night's lodging, together with other interesting incidents in his checkered life, will have a very much greater influence in awakening in the heart of the child a desire to know more about the author and his writings than all the statistics as to his birth and death or the number and titles of the books he wrote, and when he wrote each, could possibly do. The lives of some of our literary characters, Goldsmith, Gray, Johnson, and others, may be made to read almost like a romance; and this is the style of teaching which should characterize the first work in literature.

Authors' Birthdays.—The celebration of authors' birthdays by appropriate literary exercises is an excellent means of awakening an interest in literature. At such a time a brief biography of the author should be read by some selected pupil, or the teacher should give an interesting biography of the writer whose birthday is celebrated. At this time the pupils may also recite some selections from the author. Interesting anecdotes may be related, and if visitors be invited to the school on such an occasion, these too may add something to the general fund of knowledge.

Memorizing Extracts.—In the early stages of teaching literature the pupils should be encouraged to memorize choice extracts from each author as he is studied. These should be brief, and such as are in every way worthy of being remembered either for the sentiment they contain or for their beauty of expression. Fill the child's mind with the noblest thoughts of our great authors, and it

will manifest but little desire to read such literature as is unhealthy or pernicious in its tendencies.

II. Studies in Literature.

The second step in the teaching of literature is that of training pupils to study the language of the various authors critically, with the view of not only appreciating the beauties, but also detecting the defects, of language, style, and thought.

Too often the drill in rhetoric and grammar which our young men and women receive in school ends with the mere technical drill, without an application of the principles of either science to the critical analysis and study of our literature, and thus much of the practical benefit of these studies is lost.

A Limited Number of Authors.—It is important in studying literature in the manner here suggested that but a limited number of authors be taken. A larger number would not only tend to confuse the mind of the learner, but also give him only a partial knowledge of any one of them.

The Plan.—A good plan is to study first a brief biography of the particular author discussed, and acquire a knowledge of his work; also read a short criticism of his style and character as an author; and, finally, examine critically one or more of his masterpieces.

Logical Analysis.—It is important to study some of the masterpieces of one's language critically, for the reason that it causes the student to make a practical application of his knowledge of rhetoric and grammar. These are to him no longer abstract sciences; they become important instruments in his hands to measure the thought and

weigh the expression of those whose writings have been adjudged the models of literary style.

This logical analysis not only compels the pupil to apply his knowledge of grammar and rhetoric, but it also enables him to appreciate the beauties of both thought and expression as well as detect the faults of the various writers. It thus fosters a taste for the pure and the exalted in literature, and prepares the student to form a vigorous style of his own. Literary criticism is always conducive to literary growth and development.

III. History of Literature.

The literature of a language is closely connected with the history of the people speaking that language, and to a great extent the history of a literature is the history of a nation. The current history of a nation has much to do with shaping the literature of that nation from age to age, and the progress or the decline of a people may be traced in its literature.

The study of the history of literature can be pursued most profitably by those who have studied the history not only of their own country, but of the world. To study the history of literature without this general historical knowledge will give us but a limited view, and enable us to judge only partially of the influences of the different literary epochs on their successors.

The student of general literature should be liberal-minded and examine closely into the habits of the people during any literary era, in order to determine their influence in the formation of the literary style which characterized that era. He should also consider carefully the reflex influence which the literature of the

period exercised on the people. It will be well for him also to see clearly what the influence of any one period or epoch may have been on its successor. All this is necessary in order to get a comprehensive view of the subject; and these close discriminations can be made only by those who have considerable general historical knowledge.

Biographical Sketches.—Considerable interest may be awakened in the study of literature by having pupils write short biographical sketches of the authors they study.

Critiques.—When pupils have advanced sufficiently to be able to criticise not only the style and the language of an author, but his productions as a whole, it will be found profitable to have them write literary criticisms of dramas, poems, histories, textbooks, and other works. The effect will be not only to give them valuable literary training, but also to cultivate a pure literary taste.

MATHEMATICS.

CHAPTER I.

The Value of Mathematical Study.

Mathematics forms the second department of study to be pursued by the child. In our present discussion it is necessary to consider the method of teaching only Arithmetic, Algebra, Geometry, and their applications. It is not the province of this work to discuss the higher mathematics or show how they may be taught, for if a pupil be well taught in the three branches above named, he will have acquired such an impetus in the methods of mathematical study that not even the most staid and conservative professor will be able to check his enthusiasm.

The Value of Mathematical Study.—The study of mathematics is valuable in a twofold sense:

1. *It gives Valuable Mental Discipline.*—It may readily be shown that nearly every intellectual faculty is exercised and strengthened by mathematical study. Probably no study requires greater concentration of thought, and none thus furnishes more valuable exercise for the culture of attention.

Mathematics is valuable also in cultivating man's reasoning powers. Dr. Wickersham says: "The habit of rigid demonstration, of close thinking, which mathematics inculcates, must be in itself very valuable. If no other kind of reasoning be practiced, it will no doubt lead to a one-sided culture; but, pursued with other kinds, any danger of this sort is avoided, and much is gained by introducing somewhat of mathematical exactness and clearness, both of thought and language, into what has been called the 'common reasoning of life.'"

2. *It is Valuable in its Application.*—There is no other science which is so closely identified with all the business-affairs of life. Indeed, there is scarcely any other science into which mathematics does not, to some extent, enter as a factor. Natural Philosophy, Astronomy, Botany, Chemistry, Geography, and other studies in which matter is considered in its various forms and movements, depend in a measure on mathematical laws.

It is true that mathematics has received more than its due share of attention in many, probably in most, schools, but this is not the fault of the science itself. Let teachers give to it its due share of attention, no more and no less, as compared with the other branches, and we shall find that it is a most valuable study, not only in itself and as a mental discipline, but also in its application to nearly all other departments of knowledge.

CHAPTER II.

Arithmetic.

I. Methods.

Definition.—Arithmetic is the science of numbers and the art of computing by them. As a *science*, it treats of the principles, properties, and relations of numbers. As an *art*, it applies this science in computation. The term *arithmetic* is derived from the Greek *arithmos*, meaning "number."

Oral and Written Arithmetic.—The processes of solution in arithmetic are two: first, that in which words alone are used in the solution, which is properly known as *Oral Arithmetic;* and, secondly, that in which written characters are employed, which is properly known as *Written Arithmetic. Mental Arithmetic*, as applied to oral solutions, is a misnomer, as the same mental process is required for a written as for an oral solution. *Intellectual Arithmetic*, as a term, is open to the same objection as mental arithmetic, for the process of solution in either oral or written arithmetic is intellectual, and the term is therefore equally applicable to either. If either term were admissible, the word "intellectual" would be preferable to the word "mental," for the reason that the latter term includes also the operations of the sensibilities and the will, which surely have little to do with the solution of arithmetical problems.

The question here arises, Should Oral and Written Arithmetic be taught together or separately? Arguments on each side have been advanced. The advocates of the plan of teaching the two processes separately urge the following:

1. That their object is different, one being discipline in analysis, and the other skill in calculation;

2. That their spirit is diverse, one being analytic, and the other synthetic;

3. That they cannot be properly co-ordinated;

4. And hence to combine is to neglect oral.

The arguments in favor of teaching the two together are the following:

1. Time is economized, and thus an opportunity is afforded to give more attention to equally important subjects—language-culture, natural-science lessons, and others.

2. Fewer textbooks are needed.

3. When taught separately, oral arithmetic becomes a hobby, to the detriment of much more valuable school studies and exercises.

4. Oral solutions are simply preparatory to written work. The simpler processes under every rule may be taught best orally, and as the work becomes complicated in character the written work may be substituted for the oral.

5. Both oral and written methods require the same intellectual process, and there seems, therefore, to be no more reason for separating the two than exists for the separation of written and oral recitations in any other branch of study.

6. When oral arithmetic is pursued as a distinctive

study, it is liable to degenerate into mere memory-puzzles, in which the science of algebra and the science of arithmetic become hopelessly mixed.

7. When taught separately as oral and written arithmetic, it is difficult to teach arithmetic systematically, for the reason that the progress in the two methods is not co-ordinate, pupils usually studying and reciting on the same day topics having no connection and being in no way related, except that they both belong to the science of arithmetic.

There seems to be really no good reason why arithmetic should be divided in the methods of teaching, any more than should algebra, grammar, geography, or any other branch of study. Taking into consideration the fact that this science, when divided, monopolizes almost one-third of the school-hours of the day, it is unwise to teach the oral and the written process as distinct studies.

II. Principles Governing the Teaching of Arithmetic.

1. **The First Teaching in Arithmetic should be Concrete.**— Children think of Number in connection with objects. One, two, three, etc. represent to them one boy, two apples, three birds, and the like. The first exercises in number should therefore be in connection with objects, and these objects should be such as are familiar to the learner. At first it is best that objects be present, and that the pupils be permitted to handle them. Gradually, however, the objects may be dispensed with and the names only be used.

Nothing is more convenient in the teaching of the fundamental rules than a numeral frame or *abacus*. The pictures found in primary arithmetics serve a

good purpose in ornamenting and beautifying the page, but their necessity for any other purpose may be seriously doubted.

2. **The First Lessons in Arithmetic should be Oral.**—The pupil in learning to count, which is the first process in arithmetical work, should be permitted to see and touch the objects for himself. The elementary work may be made very much more interesting by means of oral exercises than otherwise. Pupils may also be taught considerable arithmetic before they are able to read a textbook, and thus be prepared, to some extent, to use the book more intelligently and to better purpose when they do use it.

3. **Processes should Precede Rules.**—The child may be taught the mechanical process of performing an arithmetical operation long before he is able to formulate the rule which governs the process. The proper plan is inductive, and if the pupil be properly taught he may in time be led to formulate the rule for himself, and thus make it a valuable part of his own knowledge, which he may have at command on all occasions. The *how* should precede the *why* in all primary instruction. This plan of teaching will also serve to create thought, and thus tend to answer one of the chief ends of education.

4. **Oral and Written Methods of Arithmetic should be Combined.**—The first steps in teaching any arithmetical topic should consist of oral exercises, until the pupil understands clearly the process and the principle embraced, or until problems become so complicated or so difficult that the pupil is compelled to waste mental energy in the effort to remember the various conditions and statements of the problem. At this stage the nature

of the work should be changed, and written exercises should be substituted for the oral.

A pupil will acquire a knowledge of arithmetic proper much more readily when the two processes are combined; and this, therefore, seems to be the proper method to pursue throughout the whole course. Neither should be neglected for the other, but each should be made to aid the other in attaining the mental discipline and the practical instruction afforded by the study of this branch.

5. **Arithmetical Instruction should Aim to be Practical.**—Aside from the disciplinary value of arithmetical study, the science is one of those which have an important bearing on the work of every-day life. Few branches of study enter so largely into the business-affairs of a community. From the very beginning pupils may be taught to see that the various processes learned have a practical use in life. Problems should therefore aim to include actual business-operations, such as would be likely to characterize the community in which the subject is taught. Even the simplest operations of the beginners may be of this character, and the practical value of the study will at once be recognized. It is all-important that children do not study arithmetic as a collection of puzzles on which they may give themselves gymnastic training of an intellectual character.

6. **Pupils should be Taught Principles.**—One of the chief dangers in the distinctive study of so-called Mental Arithmetic is that pupils learn solutions rather than principles, and even algebraic problems are solved by a sort of arithmetical process which is committed by the pupil as a model solution, and is made to answer for every other problem of a similar character. Pupils, by the

solution of individual problems, should be led inductively to understand the principles and formulate the rules for themselves.

The student who once understands the principles of arithmetic thoroughly will have no difficulty in applying them to the solution of problems. Much time has been wasted in the past in the solution of problems "according to rule." This rule the pupil was expected to memorize and be able at any time to apply. But when problems arose whose solution required the application of a number of rules, the pupil at once was led to feel his utter ignorance of the science of arithmetic and his inability to apply its principles.

The Plan.

Counting.—The child acquires its first idea of number by comparing one object with more than one. Its idea of number is never abstract, and therefore the counting at first should be in connection with objects; thus, *one boy*, *two boys*, *three boys*, etc., rather than *one*, *two*, *three*, etc.

The child possesses the idea of number to some extent before it enters school. Many convenient objects may be found by which the teacher is enabled to expand this knowledge, beginning at that point where the child's knowledge ends, and carrying it forward gradually from one point to another. Grains of corn, beans, strokes on the blackboard, or sticks may be used in the counting exercise, but the most convenient object is the numeral frame heretofore mentioned.

Pupils should be taught to count not only forward, but also backward. Counting backward bears the same relation to Subtraction as counting forward bears to

Addition. Pupils may also be required after a time to count without objects as well as with them.

The teacher should be careful not to hurry his pupils in the matter of counting. Some will learn more rapidly than others, and the temptation will be to worry those who think slowly in order to have them keep up with the brighter ones. He should also see that his pupils do not count without understanding. Pupils are often able to count to a hundred or more, who scarcely know the meaning of the words they use. The best test to discover whether they are counting intelligently or not is to place a number of objects before them, and have them count any required number to be placed aside.

Notation and Numeration.—Notation and Numeration should be taught together. When the pupil has learned to count one object, the teacher may at the same time write on the board the word *one* and the figure *1*, the pupil in each case being required to call the word or the figure by name, and hold an object in his hand to show that he comprehends the value and relation of the word and the figure. In a similar manner he may be taught the word *two* and the figure *2*, and their relation to two objects. In this way, also, the other numbers up to *nine* may be taught. The pupil should in these exercises be required to reproduce the figure and the word on the blackboard, as also any number previously taught, when required by the teacher.

When the pupil reaches *ten*, he may be taught that ten ones are called *ten*, which is written *10;* and two tens, *twenty*, written *20;* three tens, *thirty*, written *30;* and so on to *90*.

The next step is to teach the numbers from *ten* to *nineteen*. Here he may be taught that—

One ten and one is called *eleven*, written *11;*
One ten and two is called *twelve*, written *12;*
One ten and three is called *thirteen*, written *13;*
One ten and four is called *fourteen*, written *14;*
etc., etc., etc.

From this point onward the numbers are readily taught. A table similar to the following, in which the teacher gives the pupils instruction as to the meaning of each number, will soon acquaint them with both the writing and the reading of numbers to almost any extent:

1	10	100	1000	10,000
2	20	200	2000	20,000
3	30	300	3000	30,000
4	40	400	4000	40,000
5	50	500	5000	50,000
6	60	600	6000	60,000
		etc., etc., etc.		

The teacher should also teach the relation of tens to units, hundreds to tens, thousands to hundreds, and so on.

Pupils should have numerous exercises in both reading and writing numbers, and when they make mistakes they should be led, by judicious questions on the part of the teacher, to discover and correct these mistakes for themselves.

After having learned to read and write as far as thousands, the pupils may be taught the use and mean-

ing of *groups* or *periods*, the teacher showing that each third *period* takes a new name, and that the intermediate places are *tens* and *hundreds* of the group.

The pupil should not be kept reading and writing numbers until he has mastered these subjects thoroughly. He may proceed with the simpler exercises in the fundamental rules, but he should have frequent reviews of Notation and Numeration until he is entirely familiar with both.

Integers.

Addition.—In teaching Addition the first lessons should be in connection with objects. An oral exercise should precede any written work. Here, again, the numeral frame will be found convenient. The teacher can hold the frame before the pupils, and every operation may be illustrated and verified on the frame.

When pupils have learned to count by *1*'s, they may with great profit be taught gradually to count or add by *2*'s, *3*'s, *4*'s, etc., up to *10*'s. This method of counting by combinations will prove of special advantage in subsequent business-applications by enabling the student to add both rapidly and correctly.

The first lessons in written addition should consist of concrete numbers whose sum does not exceed *nine* in any column. In connection with these lessons the pupils should be taught how to write the numbers so that in adding, as a matter of convenience, units may be placed under units, tens under tens, etc. They should also be taught the use of the signs + and =, and how to read expressions containing these signs.

In this connection may be taught also the addition of

some abstract numbers. If the pupil has been carefully taught from the first, he will have little difficulty in learning this part of addition.

The second series of lessons should also begin with concrete numbers, but should include such that the sum of one or more columns may exceed *nine*. The first lessons should be oral, in order that the pupil may first learn how to express the sum in words. When once he can add orally, he should have exercises in adding single columns and writing the results, and, following these, exercises containing two columns, and so on, making the work gradually more and more difficult.

The teacher should first teach how the mechanical part of the work is done by placing himself at the board, and permitting the pupils to add while he shows them how to write the result and what to do with the number not written on the board. After the pupils have once learned how to write the results, they should be sent to the board and the teacher should dictate a number of problems to them, grading the exercises in difficulty, and drill until he sees that the children are able to do the work for themselves.

If the teacher have a mathematical chart, he may now give them a number of questions to be solved, or he may place several columns on the blackboard and indicate what parts may be added, as the upper *four* lines, the lower *six* lines, etc., so as to give the pupils a number of problems on which to practice and acquire expertness.

The third series of lessons should include a number of practical reading-problems, such as are likely to occur in business-operations, as the cost of certain articles pur-

chased at a store or the sum of the number of yards of carpeting in several rooms.

As a variation of this exercise the pupil may with profit be required to originate some problems, which he may either solve or have referred to other members of the class. This exercise will tend not only to make him think, but it will also make him thoroughly acquainted with the principles of the study he pursues.

Subtraction.—The same general principles govern the teaching of Subtraction as apply to the teaching of Addition. By some writers it is held that the two subjects should be taught together; and this may be done with success, to a certain extent, in the simpler exercises. Oral exercises should precede written work, and the first lessons should consist of concrete numbers.

The pupil should first subtract by *1*'s from a given number downward; thus, 20, 19, 18, 17, 16, etc. Following these exercises should be others in subtracting by *2*'s; as, 50, 48, 46, 44, etc., 51, 49, 47, 45, etc.; and thus also by *3*'s, *4*'s, *5*'s, etc. The exercise may be varied by counting both forward and backward by *2*'s, *3*'s, and so on.

The first written exercises in subtraction should consist of very simple questions, in which no figure of the subtrahend is of greater value than the corresponding one in the minuend. The first numbers should be concrete, and following these there may be exercises also in abstract numbers, together with practical reading-problems.

The second series of lessons in subtraction should consist first of easy questions in which one or more figures in the subtrahend are of greater value than the

corresponding figures in the minuend. The explanation is best reached by a few simple problems to be solved orally; thus, "Six sheep from thirteen sheep, leave how many?" The pupil can answer this question readily. Now let the work be placed upon the blackboard. The pupil will see at once that 6 cannot be subtracted from 3, and he will see quite as readily that it can be subtracted from 13, as was done in the oral solution. Let a number of similar problems be given, the teacher illustrating the oral process by written work on the board. The minuend in none of these problems should exceed *nineteen*.

The next step is that of taking problems whose minuend exceeds *nineteen;* thus, "Eight sheep from twenty-two sheep, leave how many?" If the pupil is not able to answer this orally, let him answer it by counting on the numeral frame or by writing strokes on the board, and erasing the number to be subtracted. Having secured the proper result, let the teacher place the subtrahend 8 on the blackboard in its proper place under the minuend 22. He should then show that 8 units cannot be taken from 2 units; hence he takes one of the 2 tens, which is equal to 10 units; these he unites with the 2 units, and he has 12 units: 8 units taken from 12 units leave 4 units. Having taken away one of the 2 tens, there is but 1 ten left; therefore there remain 1 ten and 4 units, or 14, which the child sees is the same result he secured by counting the 8 objects from the 22. The teacher should solve a number of questions in this way, letting the pupils do all the work, if possible, except the writing.

The pupils also should then have exercises on the blackboard until the teacher sees that they understand

the mechanical process, and then they may be directed to solve the problems in the textbook which they use.

The plan of "borrowing" and "carrying" the author believes to be both undesirable and illogical. The truth is, we never borrow in subtraction; we simply convert a unit of a higher denomination to units of a lower. Pupils readily become quite as expert by the method here advocated as by any other, and they see the reason for every step they take.

In questions like the following, "Subtract 16 from 900," we simply convert 1 hundred into tens, and 1 of these into units; we then have 8 hundreds, 9 tens, and 10 units, when the question becomes as easy as any of the others, and the explanation as simple.

Combination Exercises.—As soon as pupils can both subtract and add, they should be required to solve practical problems which combine both processes; and these combination problems should be a prominent feature of the work from this point forward throughout the Arithmetic. Pupils should have exercises in them in connection with every rule taught.

Definitions.—The definitions of the various terms may be taught as the pupils proceed from one subject to another, though the teacher should never require the pupils to recite them by number.

Multiplication.—It is well to show pupils when they begin the study of Multiplication that this is simply a short or concise method of a special case of addition; thus, that six times 7 added and six times 7 multiplied produce the same result.

The Multiplication Table.—Before much effective work

can be done in the teaching of Multiplication it is necessary that the pupil should know the Multiplication Table, at least as far as *nine* times *nine*. The old plan of acquiring this knowledge was for the pupil to spend weeks, and often months, in attempting to memorize the table as far as *twelve* times *twelve*. The result was often very unsatisfactory, for the reason that some were not able to memorize readily, and others could see no practical use of the table, while still others, who could recite the table readily from beginning to end, could give the product of scarcely any two intermediate numbers.

The *better plan* is that of having pupils construct the table for themselves, or at least as much as it may be necessary for them to know at a special time. This will not only show them the practical use of the table, but it will also serve to impress it on their memory. It is necessary, however, that they should also repeat the table frequently as far as they have learned it, and that they should occasionally write it out on their slates. It will also be of some advantage to recite it occasionally in concert, or even to sing it; but the teacher should see that pupils do not become boisterous in these exercises.

In order to make the pupil's knowledge of the table valuable and permanent, the teacher should require him to apply it frequently in exercises similar to the following: "Multiply by 3 from 1 to 6;" "Multiply by 5 from 2 to 7."

The first written lessons in multiplication should consist of examples in which there is but a single figure in the multiplier. The child should be taught that the method of writing the result is the same as in addition, and that the figure not written down is added to the

next result. It is sufficient in the primary work to teach the process alone, leaving the explanation and the reason for future lessons.

The second series of lessons should consist of those having two or more figures in the multiplier. Here, again, it is best to teach at first the process only, and postpone the explanation of the reason for each step until the child is able to understand it fully. As pupils become more advanced, they may be required not only to give every step of the process of solution, but also state the reason.

Short Methods.—When pupils have learned the ordinary process of multiplication thoroughly, or when they review the subject of arithmetic, they may be taught some of the shorter methods of multiplication.

Among these may be included the *Method by aliquot parts of one hundred* and the *Method of multiplying when the multiplier is near some power of ten*, as 998, where the shortest method would be to multiply by 1000 and subtract 2 times the number.

Division.—Division is the reverse of multiplication; a knowledge of the multiplication table is therefore quite as necessary to teach division properly as it is to teach multiplication. Thus, it is evident that if 9 times 7 is 63, 7 is contained in 63 nine times. A division table may be constructed from the multiplication table, but there hardly seems to be a necessity for it, for the very question, "Why is 7 contained in 63 nine times?" throws the pupil back on his knowledge of the multiplication table, and he answers, "Because 9 times 7 is 63."

Short Division.—What is known as Short Division is usually taught before Long Division, chiefly because it deals with smaller numbers and is easier. The divisors in Short Division do not usually exceed 12, and only the partial quotients are written, the processes being performed mentally. It presents scarcely any difficulty in teaching, and it need not here be discussed as a special method.

Long Division.—Probably more time is given to mastering Long Division than any other process in arithmetic. Much of the difficulty which the pupil experiences arises from the fact that the problems become difficult too rapidly. Only such questions should be taken at first as can be solved readily by the process of Short Division; and when the pupil performs the operation by Short Division the teacher should solve the same problem by the process of Long Division, and then show the pupil that the two methods of procedure do not differ materially, except that in one all the operations are placed on the board, while in the other only the partial results are placed there. A great number of simple problems that may be solved by either of the processes should be given, and this plan should be continued until the pupil learns to perform the operation by Long Division readily, after which more difficult problems may be assigned. When the divisor is to consist of two or more numbers, the first divisors used should be 10, 11, and 12, in order that the transition may be made gradually.

Short Methods.—When pupils have learned both processes, they may be taught some of the short methods of division, including the *Method of dividing when there are*

ciphers to the right of the divisor and the *Method of dividing by factors.*

Equal Parts.—The process of division includes not only the method of finding how often one number is contained in another, but also the division of a number into equal parts. In such case both dividend and divisor may for the time be considered abstract. Thus, in the question, "If 16 acres of land cost 1680 dollars, how much does 1 acre cost?" the solution would be as follows: "If 16 acres cost 1680 dollars, each acre costs as many dollars as 16 is contained times in 1680, or 105 dollars."

The Grube Method.

Grube's method of teaching primary arithmetic, which is used extensively in Germany, consists in teaching during the first year all possible combinations and comparisons of numbers from 1 to 10. It is intended chiefly for pupils from the age of four to the age of six. Thus, in treating of the number 3 the child is taught that $1+1+1=3$; $2+1=3$; $1+2=3$; $3-1=2$; $3-2=1$; $3\times1=3$; $1\times3=3$; $3\div1=3$; and in treating of the number 4, the following: $1+1+1+1=4$; $4-1-1-1-1=0$; $4-1-1-1=1$; $4-1-1=2$; $4-1=3$; $4\times1=4$; $1\times4=4$; $4\div1=4$. $2+1+1=4$; $2+2=4$; $4-2=2$; $2\times2=4$; $4\div2=2$; $3+1=4$; $1+3=4$; $4-3=1$; $1\times3+1=4$; $3\times1+1=4$; $4\div3=1$, and 1 remaining.

The method has some prominent advocates among American teachers, and many quite as eminent opponents. In may be said here that even if the method were strictly philosophical, its practical value might be seriously questioned. Its usefulness, aside from its

novelty, is at least doubtful, as compared with the practical and natural methods pursued by the best American teachers. Its application is of course limited to the four fundamental rules. It would seem, therefore, naturally to follow the teaching of these rules, rather than precede them.

Factoring.

Ability to factor numbers readily and rapidly is a great aid in performing the operations of many parts of arithmetic. This is particularly true of the *Greatest Common Divisor*, the *Least Common Multiple*, *Fractions*, etc. It is held by some teachers to be quite as important for the pupil to memorize the factors of numbers below 100 as it is to know the multiplication table. It certainly is a great help in making one expert in the performance of arithmetical work.

Frequent exercises in factoring will prove valuable to all students. As an occasional drill it is suggested that the class be placed at the blackboard, and that the alternate pupils take odd and even numbers, as dictated by the teacher, and write the results only. Thus,

20 = 2, 2, 5.	24 = 2, 2, 2, 3.
21 = 3, 7.	25 = 5, 5.
22 = 2, 11.	26 = 2, 13.
23 = 23.	27 = 3, 3, 3.

Here also may be taught all the definitions of factors, prime, composite, and other terms; also all definitions concerning multiples and divisors.

Suggestions.—It is best to teach beginners but a single method of finding the Greatest Common Divisor or the

Least Common Multiple of numbers. More than this tends to confuse. After pupils have once become thoroughly familiar with one method, they may then be taught others, but never so long as they are apt to confuse the methods and thus lose the benefit of all. The same remark will apply to other arithmetical processes: one of the mistakes we make is that of attempting to teach at first more than the mind of the young learner is able to retain.

Fractions.

The idea of a fraction is most readily taught by means of objects. These may be divided so as to illustrate the idea of a half, a third, a fourth, etc. Care should be taken to use at first only such objects as lose their unity by division into parts. Sticks, lines, and strings simply divide themselves into shorter sticks, lines, and strings, and are therefore not the best illustrations to use. Apples, potatoes, sheets of paper, and the like, each of which loses its unity by division, answer the purpose of illustration much better.

In teaching the idea of a fraction the child may be taught at once how to write it both literally and by figures. Thus, if the expression "one-half" be taught, the teacher should place on the board both the word *one-half* and the fraction $\frac{1}{2}$ expressed in figures. The same plan should be followed in the teaching of other fractions.

Reduction of Fractions.—1. *Whole Numbers to Fractions.*—After the pupil has acquired the idea of a fraction, and learned how to write and read fractions, the first step is to teach how to reduce whole or mixed numbers to fractions. The first lessons in this process

should be in connection with such objects as are familiar to the child, in order that he may fully and readily comprehend each step of the process. Very simple problems should be given, such as "How many halves in an orange?" "How many fourths in an apple?"

From this the transition will readily be made to such questions as "How many halves in 3 apples?" "How many fourths in 2 oranges?" After the pupils have become familiar with the process of thus reducing concrete numbers, further exercises should be given in the reduction of abstract numbers; and when they have once learned to reduce both concrete and abstract whole numbers readily to fractions, they should be taught the reduction of mixed numbers to fractions, using at first such questions as "How many half dollars in $2\frac{1}{2}$ dollars?" "How many thirds of a pie in $3\frac{1}{3}$ pies?" From these the change should be made to simple abstract numbers, as "How many fifths in $3\frac{1}{5}$?" and similar questions.

All these preliminary exercises should be by oral solution, though sometimes it will be found valuable for the teacher to require a strictly mental solution, in which the child performs the whole process mentally and announces the result only. This is a valuable exercise for cultivating the power of attention, and it affords also valuable memory-culture.

The written exercises or solutions should follow the oral and the mental, and should consist of problems of a more difficult nature than those given for oral solution.

2. *Improper Fractions to Whole or Mixed Numbers.*— The second step in Reduction is that of changing improper fractions to whole or mixed numbers. Here,

also, the first exercises should be oral, and should be in connection with familiar objects. Questions similar to the following will be found appropriate for the first exercises: "How many dollars in 2 half-dollars?" "How many pies in $\frac{3}{3}$ of a pie?" "How many apples in $\frac{4}{2}$ apples?" These questions should be followed by those dealing with abstract numbers; and the process should be continued until the child can readily solve problems or give the result correctly, without hesitation, in simple numbers containing fractions as far as tenths or twelfths.

When the pupil has once learned to perform the reduction of fractions to whole numbers readily he should have repeated exercises in connection with the reduction of improper fractions to mixed numbers, beginning, as before, with concrete numbers, and proceeding to abstract. In the written process, either of reducing whole numbers to fractions or fractions to whole numbers, the child should, if possible, be permitted to derive and formulate the rule, though the teacher should be careful to see that it is correctly worded, so as to express exactly what is meant.

3. *Fractions to Equivalent Fractions having Higher Terms.*—The same general plan of procedure may be followed here as in the two preceding cases. The first questions should be very easy, and the change to the more difficult should be very gradual. The first questions may be somewhat like the following: "How many fourths of an apple in $\frac{1}{2}$ an apple?" The solution would be as follows: "Since there are $\frac{4}{4}$ in one apple, in $\frac{1}{2}$ an apple there is $\frac{1}{2}$ of $\frac{4}{4}$, or $\frac{2}{4}$." The next series of questions should consist of those having for the numerator a number greater than 1; thus, "How many tenths in $\frac{4}{5}$?"

4. *Fractions to their Lowest Terms.*—The general plan

of procedure here also is the same as in the preceding cases. The solution of the simplest questions should be somewhat like the following: "How many thirds in $\frac{4}{6}$?" *Solution.* Since $\frac{1}{3} = \frac{2}{6}$, there are as many thirds in $\frac{4}{6}$ as $\frac{2}{6}$ is contained times in $\frac{4}{6}$, or two thirds.

In connection with these two cases may be taught the principles relative to multiplying or dividing both numerator and denominator of a fraction by the same number.

5. *Compound Fractions to Simple Ones.*—The pupils may be taught here that a fraction of a fraction, as $\frac{1}{2}$ of $\frac{3}{5}$, is called a *Compound Fraction.* In reducing such fractions to simple ones the following solution may be followed: "Since $\frac{1}{5}$ equals $\frac{2}{10}$, and $\frac{3}{5}$ equals $\frac{6}{10}$, $\frac{1}{2}$ of $\frac{3}{5}$ is $\frac{1}{2}$ of $\frac{6}{10}$, or $\frac{3}{10}$." The pupil, by means of similar questions, may be led to see that a new denominator may be secured by multiplying together the denominators of the two parts of the compound fraction. Thus, in $\frac{1}{3}$ of $\frac{2}{5}$ a new denominator is found in $3 \times 5 = 15$. For the present, all the child needs is the mechanical process; the reason for the method may be taught later.

The second grade of problems should consist of those whose numerator is greater than 1; as, "What is $\frac{2}{3}$ of $\frac{3}{4}$?" The solution might be given as follows: $\frac{3}{4}$ equals $\frac{9}{12}$; $\frac{1}{3}$ of $\frac{9}{12}$ is $\frac{3}{12}$, and $\frac{2}{3}$ of $\frac{9}{12}$ is 2 times $\frac{3}{12}$, equal to $\frac{6}{12}$, or $\frac{1}{2}$. Or the following form of solution may be taken: $\frac{1}{3}$ of $\frac{1}{4}$ is $\frac{1}{12}$; $\frac{1}{3}$ of $\frac{3}{4}$ is three times as much, or $\frac{3}{12}$; and $\frac{2}{3}$ of $\frac{3}{4}$ is twice $\frac{3}{12}$, equal to $\frac{6}{12}$, or $\frac{1}{2}$.

The written problems may consist of several simple fractions; as $\frac{2}{3}$ of $\frac{3}{5}$ of $\frac{3}{4}$, and similar combinations. Here also the pupil should be taught the mechanical

process of multiplying the numerators together and the denominators together. He may also be taught the plan of cancelling like factors in numerator and denominator, or be required, as in Case 4, to reduce the fractions to lower terms.

Common Denominator.—A thorough knowledge of the preceding cases will enable the pupil to reduce fractions readily to a common denominator. It may be well to show to the learner the necessity for fractions having a common denominator in order that they may be either added or subtracted. Thus, we cannot add $\frac{3}{4}$ and $\frac{2}{5}$ without reducing to 20ths or some other denominator common to both, any more than we can add 3 horses and 2 sheep. We can add $\frac{15}{20}$ and $\frac{8}{20}$, however, just as we can add 3 animals and 2 animals.

The first questions should have the required denominator stated in the question. Thus, "Reduce $\frac{2}{3}$ and $\frac{3}{4}$ to 12ths," or, "How many 12ths in $\frac{2}{3}$ and $\frac{3}{4}$?" Following these, the same problems may be put in different language. Thus, "Reduce $\frac{2}{3}$ and $\frac{3}{4}$ to fractions having a common denominator."

The *Least Common Denominator* may be taught in much the same way, except that pupils must be led to see that the least common denominator is the least number that will contain all the given denominations without a remainder.

Addition and Subtraction of Fractions.—When the pupil has once thoroughly mastered the elementary principles of fractions, as heretofore explained, he will have little trouble to learn the processes of adding and subtracting fractions. The chief thing for him to remember

is that only similar fractions can be added or subtracted, and that fractions must first be reduced to a common denominator before the processes of addition and subtraction can be performed.

Let the pupils have ample exercises, particularly in the addition and subtraction of fractional numbers containing *halves, thirds, fourths, sixths, eighths, tenths,* for nearly all business calculations are limited to these. Very many exercises should be furnished by the teacher, and these may either be original or be selected from other textbooks than that in use.

Multiplication of Fractions.—Multiplication of Fractions properly includes three cases:

1. *To Multiply a Fraction by an Integer.*—This may be taught in two ways: first, by multiplying the numerator, and then reducing the fractions, as $3 \times \frac{6}{9} = \frac{18}{9} = 2$; or, second, by dividing the denominator, as $3 \times \frac{6}{9} = \frac{6}{3} = 2$. Either plan is correct; the first is the easier, and therefore the better to begin with, particularly in connection with concrete numbers. It is a plan also by which all problems can be solved, while the second plan requires that there be a common factor in the multiplier and the denominator.

2. *To Multiply an Integer by a Fraction.*—The plan of teaching this case need not differ from that of teaching the preceding. The mechanical process in finding $6 \times \frac{3}{4}$, or taking $\frac{3}{4}$ of 6, does not differ; the result is the same whichever number is placed first. Practical problems may precede the abstract process for the purpose of awaking interest. The following will serve to illustrate: "A boy had 25 cents, and lost $\frac{1}{5}$ of it; how much did

he lose?" The solution of abstract problems should follow, as "How much is $\frac{2}{3}$ of 15?" etc.; and following these should come problems resulting in mixed numbers, as "How much is $\frac{3}{4}$ of 7?"

3. *To Multiply a Fraction by a Fraction.*—This process is substantially the same as that of reducing a compound fraction to a simple one. The pupil may, however, be taught here to utilize the principle of cancellation more fully than in dealing with compound fractions. The pupils should have frequent exercises also in reading-problems, such as follows: "What cost $1\frac{1}{2}$ dozen of eggs, at $12\frac{1}{2}$ cents a dozen?" These will give him practice in analyzing the process of solution.

Division of Fractions.—Division of Fractions gives rise to four cases:

1. *To Divide a Fraction by an Integer.*—The first problems here should be such as contain numerators which are divisible by the given number, such as the following: "If 3 caps cost $\frac{9}{10}$ of a dollar, how much will 1 cap cost?" The analytic solution of these will lead the pupil gradually to see the mechanical process of dividing the numerator by the given number. After this form of solution has been learned the problems may be made a little more difficult, and their character may be made to change, so as to multiply the denominator instead of dividing the numerator. The following problem will serve to illustrate: "If 3 boys earn $\frac{7}{8}$ of a dollar, how much will 1 boy earn at the same rate?" The solution may be given as follows: "If 3 boys earn $\frac{7}{8}$ of a dollar, 1 boy will earn at the same rate $\frac{1}{3}$ of $\frac{7}{8}$ of a dollar, or $\frac{7}{24}$ of a dollar."

The pupil may be taught that either multiplying the denominator or dividing the numerator is correct, and he may be permitted to give either solution as the one or the other may be the easier for him.

2. *To Divide an Integer by a Fraction.*—In teaching this case the best plan is to begin by reducing both integer and fraction to fractions having a common denominator, as in the following solution: "If 1 turkey cost $\frac{3}{4}$ of a dollar, for 3 dollars, or $\frac{12}{4}$ dollars, as many turkeys may be bought as $\frac{3}{4}$ is contained times in $\frac{12}{4}$, or 4 turkeys." If this is not entirely clear to the pupil, let it be illustrated with balls on the numeral frame, calling four balls a group, and each ball one-fourth of a group; or it may also be illustrated with grains of corn or other objects.

In the written process the inversion of the divisor may be illustrated as the pupil proceeds to explain or solve orally. Thus, in the question, "How often is $\frac{2}{3}$ contained in 4?" the solution and the written process would run as follows: "1 is contained in 4, 4 times; $\frac{1}{3}$ is contained 3 times as often as 1, or 3×4 times; and $\frac{2}{3}$ is contained only $\frac{1}{2}$ as often as $\frac{1}{3}$, or $\frac{1}{2}$ of 3×4 times, which is $\frac{3}{2}$ of 4 times, or $\frac{3}{2} \times 4$."

The teacher should show the class that this is the same as inverting the divisor and multiplying. This method of solving questions in Division of Fractions greatly simplifies the process, and in practice it is all that is necessary. Of course the pupils should have a sufficient number of exercises to lead them to see clearly the reason for inverting the divisor, though this is not necessary in their first study of fractions.

3. *To Divide a Fraction by a Fraction.*—The easiest

plan to teach this process is first to require pupils to reduce both fractions to a common denominator, and then simply divide the numerators. Easy questions should be given at first, and these should be continued until the pupils can perform the solution readily by the oral method. The questions may then be made more difficult gradually, and finally, when the written solution is preferred, the pupil may be permitted to solve the problems by inverting the divisor and proceeding as in the preceding case.

4. *The Reduction of Complex Fractions.*—This may be regarded as one of the forms of division of fractions. The number or fraction in the numerator may be regarded as the dividend, and the number or fraction in the denominator may be regarded as the divisor. All fractions may be regarded as indicated divisions.

Decimal Fractions.

Pupils should be taught that Decimal Fractions do not differ from Common Fractions whose denominator is some power of 10, except that for the sake of convenience they are written without the denominator expressed, as it is in common fractions. For instance, *seven-tenths* or *fifteen-thousandths* may be expressed either as $\frac{7}{10}$, $\frac{15}{1000}$, or as .7, .015.

The distinction between Decimal Fractions and Decimals should be taught.

Pupils should have plenty of exercises in both reading and writing decimals.

Pupils should be taught the principles governing the writing of decimals, showing the effect of removing the decimal-point either to the right or to the left; also, the

effect of placing a cipher either to the right or to the left of the decimal, or removing one from either place.

No difficulties arise in either *Addition* or *Subtraction* of Decimals; and the only important thing to keep in mind is that the decimal-points in either process shall be placed in the same perpendicular column.

In *Multiplication* and *Division* of Decimals it is necessary to teach carefully the rule for pointing off the result in either process. It is necessary to teach also that when the number of figures in the product is less than the number of decimal places in the two factors, as many ciphers must be prefixed to the result as may be necessary to make the number of decimal places in the product equal the number in both factors. Teach also that if the number of decimal places in the divisor exceed the number in the dividend, we must first annex enough ciphers to the dividend to make the number of places equal to the number in the divisor. Should the pupils fail to understand the reasons for these principles, they may be explained readily by changing the decimals to common fractions.

Denominate Numbers.

No department of arithmetic can be made more interesting than Denominate Numbers, if properly taught. Care must be taken, however, in the very beginning that the subject be made practical.

Measurements.—Let the first lessons particularly be of such a nature that the pupil may see the practical application of what he studies. If money be the first topic discussed, but little difficulty need be experienced in securing sufficient coins with which to illustrate the com-

parative values. In discussing weight, if it be impossible to have a set of weights for the school, it may at least be possible to borrow a pair of scales and a set of weights for a day or two, until pupils see the practical value of the table. When discussing linear measure use a rule and a yardstick, and let the pupils make actual measurements for themselves. It will be found interesting to have them compare and judge of measurements sometimes before applying the actual test to determine accurately.

Do not let pupils rest satisfied with committing the tables, rules, and definitions to memory. These are important, but it is more important that the learner should understand their application. When pupils study advanced arithmetic let them read something on the history of the various rules used in the different tables, also with reference to the origin of the various units, as the yard, etc.

Longitude and Time.

In order to teach Longitude and Time properly it is necessary that the pupils should first be taught what longitude is, and its relation to time. When the pupil once learns the fact that any point on the earth's surface passes through the circumference of a circle, or 360°, in a day of twenty-four hours, he will readily see that it passes through $\frac{1}{24}$ of 360°, or 15°, in an hour of time. He sees also that there is a difference of one hour in time for every 15° of longitude, and from this he can, without help, readily construct the table of Longitude and Time. If the pupil is able to construct the table, he will readily understand the conditions of all ordinary problems in this topic; and all that is further necessary is that the teacher should give numerous illustrations and

numerous practical problems both for oral and for written solution.

Ratio and Proportion.

No difficulties present themselves in the teaching of either Ratio or Proportion, except in what is known as *Compound Proportion.* All problems in compound proportion may be solved by analysis, and it would probably be best for classes to solve them in this way in studying the subject for the first time.

In presenting Compound Proportion much the easiest way of teaching it is to combine analysis with the proper statement. The simplest method of arriving at the proper statement is as follows:

1. *Place for the third term that number which is of the same kind as the answer.*

2. *Arrange the couplets as in Simple Proportion, making all divisions antecedents, and all multipliers consequents, in these couplets.*

The following solution and analysis will illustrate more fully:

Problem.—If it cost a family of 5 persons \$135 for 6 weeks' board, how much would it cost a family of 7 persons at the same rate for 3 weeks' board?

5 persons : 6 weeks :: 7 persons : 3 weeks :: \$135 : x.

Analysis.—The required answer is dollars; hence we place for the third term \$135. Since the means are known, and but one of the extremes, the members of the means are all multipliers, and the members of the extremes all divisors. If the board of 5 persons cost \$135, the board of 1 person at the same rate would cost $\frac{1}{5}$ as much; 5 is therefore a divisor, or member of the first term, and the corresponding number of persons, 7, is therefore a multiplier, or member of the second term. If the board of 7 persons

for 6 weeks cost a certain sum, for 1 week it cost $\frac{1}{6}$ as much; 6 is therefore a divisor, or member of the first term, and the corresponding number of weeks, 3, is a multiplier, or member of the second term.

Taking the product of the means and dividing by the given extreme, we have for the other extreme $94.50, the correct result.

Percentage.

Percentage is the name applied to computations in which 100 is the unit of measure.

Pupils should be taught as soon as they begin the study of Percentage that any per cent. of anything means so many *hundredths* of it; that is, that 1 per cent. is $\frac{1}{100}$, and that 7 per cent. is $\frac{7}{100}$, and so on.

They should be taught also that per cent. may be expressed in several ways, as follows:

1. By a decimal; as, .17;
2. By a common fraction; as, $\frac{17}{100}$;
3. By the term *per cent.*; as, 17 per cent.;
4. By the symbol; as, 17 %.

Care should be taken in teaching percentage to teach the solutions of the three general problems:

1. *To find any per cent. of a given number;*
2. *To find what per cent. one number is of another;*
3. *To find a number when some per cent. is given.*

Let the pupil master these points thoroughly, and he will have little trouble in making an application of percentage.

The problems in *Loss and Gain* will probably prove the most vexatious, but let the pupil keep in his mind constantly the question, "Per cent. of what?" and apply it to every question not wholly clear to him, and most of the difficulty will vanish.

In *Partial Payments* show the pupil that each problem for solution is simply a series of problems in simple interest, and that if each of these be solved correctly the general problem will give but little trouble.

In *Stocks*, etc. teach that dividends, assessments, and commissions are all calculated on the par value.

In *Bank Discount* show that this is the same as simple interest for three days more than is specified in the note; also, that most banks add four days instead of three.

General Suggestions on Teaching Arithmetic.

1. In teaching arithmetic keep in mind the fact that many pupils leave school before completing any textbook on that study. Let these study mostly that which will be of practical value to them in after-life.

2. Illustrate all primary operations by means of objects as far as possible. The idea of ten *1*'s, or a *ten*, can be taught best by putting ten objects together and calling the collection a *ten*. Objects are much superior to pictures as a means of illustration.

3. Use the numeral frame freely at first, even if you must purchase one for yourself. It is a most useful piece of school-apparatus.

4. Give pupils copious exercises in counting both forward and backward, not only by *1*'s, but also by combinations of *2*'s, *3*'s, and so on up to *10*'s, or even *12*'s. This will assist them greatly in future rapid calculation.

5. Give special attention to the addition of columns—first by single figures, then by combinations. Practice in addition enters more largely into business-life than

probably any other process of arithmetic. Accuracy here is a prime necessity.

6. Add a large number of practical problems to the textbook exercises given under each topic.

7. Give thorough drill on the fundamental rules; all others are based on these.

8. Require pupils to originate problems embracing the principles they have studied; this will not only give them practice, but it will also show that they have thought for themselves and not merely memorized the rules and "worked for the answer."

9. Give your pupils combination problems—that is, problems which combine the operations of several rules in their solution; these will do much to evolve thought on the part of the pupil. Since the pupil cannot solve these problems by any one rule, he is compelled to "think out" his own method of solution.

10. Select problems frequently from the actual business-operations of life, and encourage the pupils to think for themselves and give original solutions for these.

11. See that the work in written arithmetic, whether on the slate or on the blackboard, is neat and put in proper order; also, that pupils give all their solutions, analyses, and explanations, whether oral or written, in grammatical language.

12. Do not solve problems for your pupils if they are able to help themselves. If help is needed, let it be given indirectly in the shape of hints and suggestions, or by pointing out the mistake for the pupil and allowing him to make his own correction. Do not, however, waste time by permitting pupils to struggle for days in

their efforts to solve a problem which is beyond their capacity.

13. Teach oral and written arithmetic together, letting the pupils solve the easier problems and those which lead to the principles to be established by the oral process, and the more difficult and complicated problems by the written process.

14. Require frequent mental solutions, allowing pupils a specified time to solve a given problem silently, and at the end of the allotted time either announce the result at a given signal from the teacher or write it on their slates.

15. As a means of giving work to all, and also of securing variety, permit part of the class to solve problems orally while others write their solutions on the blackboard. Much time may be economized in this way. The principles and solutions, being given by both methods in the same recitation, will be more fully comprehended and more definitely and clearly understood.

16. Permit pupils to derive and formulate their own rules whenever possible; this will give them valuable training in both language-culture and reasoning.

17. Encourage original solutions on the part of your pupils. Many problems admit of several forms of solution. If a pupil can give a solution of his own, and it be accepted by the teacher as correct, it will greatly encourage the learner to think for himself.

18. Make haste slowly. Let pupils understand as thoroughly as possible each principle and each process before they attempt to master the next in order.

19. Do not make the mistake of supposing that the pupil ought to be able to solve every problem the first

time he studies the arithmetic. See that he knows how to perform the mechanical processes and understands as far as possible the principles. Reserve the puzzles for later work; the pupil will not lose much if he never solves them.

20. Do not make a hobby of either oral or written arithmetic; both are important, and each deserves its due share of attention.

21. Be careful not to permit your pupils to fall into the habit of solving problems by rule. This sort of study is valueless, and should not be permitted. Pupils should be led to derive rules from solutions, rather than apply rules to solutions.

22. Require pupils to give explanations of their written work. It is a dangerous practice to permit pupils to place solutions on the blackboard without explaining orally the process of solution. Pupils soon fall into the habit of copying written work, either done at their seats preparatory to recitation or done at home by persons not members of the class.

23. Require those not engaged in other work to watch the explanation of each problem carefully, and then make proper criticisms when the explanation has been concluded.

24. Problems should be so arranged that no special form of solution may be made to apply to all of them.

25. Let beginners give special attention to learning the mechanical process of solution first. Solve a question for them on the blackboard, then another, and so on, having them watch you closely until they are able to perform the process for themselves.

26. The learning of the multiplication table, together

with the tables of the weights and measures, however we may introduce the subject by object-lessons, is a piece of practice for the memory, and were it even desirable there is no way of escaping the hard work.

27. Give pupils an opportunity to make actual application of measurements. In the absence of a yardstick let them mark a lath into feet and inches, and by means of this determine the height and length of desks, benches, the blackboard, the doors, etc. If no set of weights can be secured, let paper or muslin bags be filled with sand or corn, representing the ounce, the pound, the quarter-pound, etc.

28. Do not try to have pupils understand demonstrations which are beyond their comprehension. Postpone the more difficult parts of arithmetic until the reasoning powers of your pupils are more fully developed.

29. See that pupils have specially thorough drills on the *four fundamental rules*, *fractions*, and *percentage*. These enter extensively into the practical business-matters of life, and need most attention.

30. In general, omit all complicated problems and improbable examples until the pupil has nothing else to learn. Some of these may give valuable mental training, but many of them take up valuable time that might be spent more profitably in other work.

31. If you have reason to believe that pupils have had unnecessary help in the preparation of their arithmetic-lessons, give them problems taken from other textbooks or some constructed by yourself, so as to involve the principles of the lesson.

32. Give full credit for industry and originality in

the solutions. Some think more rapidly than others in mathematics, because more talented in that direction.

33. Use the blackboard to explain to pupils. Often many in the class have the same difficulty, and you thus economize time by explaining the same question to all.

34. Bring yourself down to the level of your pupils in making your explanations. Often the best mathematicians fail to teach beginners well, because what to them seems entirely clear and needs no explanation is dark and difficult to the pupil. Do not take for granted that pupils understand; *see* that they understand.

35. When you make an explanation for the pupil let him repeat it to you to show that he understands it. It is often the case that when a pupil is asked if he understands he replies "Yes" when he should have said "No." He does this either because he does not like to put the teacher to further trouble, or because he dislikes to seem stupid.

36. Let pupils prepare business-problems out of class, and place them in the hands of the teacher to be referred to other pupils for solution and explanation.

37. In your reviews give short problems that involve principles. This will save time, and be quite as valuable a test of the learner's accuracy as would more complicated problems requiring a longer solution.

38. Bear in mind that for many pupils arithmetic is a very difficult study, and that many who seem absolutely stupid in this branch may be very brilliant in others.

39. Do not permit the study of arithmetic to monopolize more than its due share of time and attention. Other

studies are quite as important, both for their disciplinary value and for their practical worth in after life.

40. In the solution of problems, particularly in oral arithmetic, be careful not to require unnecessary verbiage. It may be logical to state the problem first, then solve it, and lastly give the conclusion, with a great flourish of "Therefore," etc., but much time might be saved when this form is once learned by giving the solution only.

41. In the study of different topics see that the subject of arithmetic is made as practical as possible. The objects in teaching arithmetic are both mental discipline and the practical knowledge which it affords for business-life.

42. See that those who study the applications are able to write the usual business-forms, including checks, receipts, drafts, notes of all kinds, etc.

43. Procure from bankers or business-men blank forms of business-papers, such as checks, drafts, and notes, and place these in the hands of your pupils for their inspection.

44. Let pupils reason for themselves, and not only state what they do, but also *why* they do it. Let them thus prove that they understand the reason for every operation they perform and every step of the process.

45. Show that many abbreviated processes and also methods of doing work, as beginning at the right to add, are simply matters of convenience.

46. If you apprehend that pupils will have any serious difficulty in studying a topic, give them judicious help by showing them in advance how they may study the subject to the best advantage.

CHAPTER III.

Algebra.

The methods of teaching Algebra do not, in general, differ from those of teaching Arithmetic, and the discussion of the topic need not, therefore, be extended to any great length. It is the purpose here to dwell briefly only on those points which present more or less difficulty in the method of presentation.

By many writers Algebra has been considered and called General Arithmetic. It deals largely with symbols where arithmetic employs words, but the principles of the two sciences do not differ, except that those of algebra are general in their application and more extended than are those of arithmetic.

Algebra may be taught profitably before the pupil has thoroughly mastered the subject of arithmetic. Indeed, it will be found that in the higher departments of arithmetic each science may be made to assist the other, and often a principle in arithmetic may be aptly stated and explained by the assistance of algebraic characters.

Symbols.—The pupil must learn the use of algebraic symbols at an early stage. This can be taught best in connection with numbers, and then the change be made to letters. Thus the signs $+$, $-$, $\times$, $\div$, having the same force in algebra as in arithmetic, may be readily applied. Others, as used in the following expressions,

$\sqrt{25} = 5$, $5^2 = 25$, $6 > 4$, $4 < 6$, may be learned as necessity requires; and when once learned in connection with numbers, the transition to letters will be readily understood. The pupils will, for instance, readily comprehend that $a + a = 2a$, or that $4a - 2a = 2a$, and so on.

Equations.—The equation in algebra is a matter of prime importance. It is therefore necessary that the pupil be taught as early as possible its use, and how to express quantities between which the equality sign is placed.

First Steps.—The first problems in algebra may be made to consist of such as can be solved by arithmetic. In making the transition from one science to the other the pupil will readily see how much more simple is the algebraic than the arithmetical solution. Thus, in the problem, "3 times John's age plus 4 times his age equals 56 years: what is his age?" the arithmetical solution would be as follows: "3 times John's age plus 4 times his age, or 7 times his age, equals 56 years; hence his age is $\frac{1}{7}$ of 56 years, or 8 years."

By algebra the solution becomes much more simple. Letting x represent John's age, we have

$$3x + 4x = 56;$$
$$7x = 56;$$
$$x = 8.$$

Oral Solutions.—Problems may be given which the pupils should be required to solve orally. Indeed, in this respect the method of teaching need not differ from that of arithmetic. The oral process of solution may precede the written in illustrating the principle, and, as the problems become more difficult, the written

method of solution may be substituted for the oral. The plan of solving algebraic questions orally, even where the textbook gives them for written solution, may be followed to great advantage.

Mental Solutions.—The teacher will often be able to create great interest by requiring strictly mental solutions, in which the pupil performs the entire operation mentally and then announces simply the result. This class of solutions should be required even in the introductory work of algebra.

Two plans may be used in conducting a recitation. First, the pupils may sit with books open, and as they read over each problem they may announce the result, or the teacher may write a series of problems on the blackboard, and the pupils may, when called upon, announce the result. This plan is, however, open to serious objection, for the reason that pupils, in preparing the lesson at the seats, are sometimes apt to place the answer after each problem, and when they come to class simply announce these answers as they have them written down. The objection may be met by having these mental exercises as a preliminary drill before the pupil has had an opportunity to prepare them.

The second plan is that usually pursued in recitations in oral arithmetic. The teacher may read the problem from the book, and require all the class to give close attention. After sufficient time has elapsed, he may ask those who have solved the problem to raise their hands, and then call upon some one to announce the result. This plan holds the attention of the entire class, and is productive of the best results.

Arithmetical Problems.—The transition from arithmetic

to algebra may be made quite easy by having pupils first solve suitable problems by the arithmetical process, and then, substituting symbols for words, employ substantially the same process algebraically. Many of the simpler exercises given for oral recitation in arithmetic may be used in this way. These may be placed as an introduction to algebra, and pupils may thus be led to see more readily the connection between the two subjects; and their interest will be aroused at once.

Algebraic Expression.—Before dealing with the special rules of algebra, pupils must be taught to express themselves algebraically. Thus, they should be taught that x and x, or $x + x$, may be written $2x$; also that 2 times x is the same as $2x$. They may be taught also that a times x, $a \times x$, may be written simply ax, and that $x \times x$ may be written x^2, or $a \times a \times a$ may be written a^3; in which expressions the small figure is called an *exponent*, and shows how many times the letter is taken as a factor.

Of course, when these points are explained to the pupil he should have abundant exercise in changing one form of expression to another; and these exercises should continue until the child writes the various expressions readily and correctly.

At this point the child may be taught also to write fractional expressions; as $\frac{1}{2}$ of $x = \frac{1}{2}x$, or $\frac{x}{2}$; $\frac{3}{4}$ of $x = \frac{3}{4}x$, or $\frac{3x}{4}$, etc.; also that any two quantities between which the equality-mark (=) is placed constitute an equation, as the expressions $x = 4$, $2x + 3x = 20$, $\frac{x}{2} = \frac{x}{4} + 1$.

Most works on algebra give the pupil a number of appropriate examples on which he may have exercise of the nature here mentioned; but to these the teacher should add many more, so as to prevent any such preparation of the lesson as is not intelligent, and at the same time develop thought in the mind of the learner.

Numerical Values.—In connection with the lessons in algebraic expression there may be given such exercises as require the pupil to substitute values. Thus, when the pupil has learned to write the expressions let him be required to substitute figures for letters. Questions like the following will furnish him valuable exercise: "If $a = 3$, what is the value of $a + a + a$?" "If $a = 3$ and $b = 4$, what is the value of the expression $2a + 3b$?" "If $a = 2$ and $b = 3$, what is the value of $a + 2ab$?" These problems should be graded in difficulty, so that the pupil may not become confused or discouraged in the beginning, and labor ever after under the delusion that algebra is a very difficult study.

Collecting.—In the early part of the work the pupil should be drilled in the process of collecting. Thus, he should be taught that $a + a + a$, or $3a$'s, may be better expressed as $3a$, and that the expression $a + a + b + a + b + b + a$, which consists of $4a$'s and $3b$'s, may be written better $4a + 3b$.

Negative Quantity.—At this point also should be taught the meaning and use of the negative quantity. This can be done best by giving several practical examples, similar to the following: "A boy buys 2 oranges for 10 cents, but when he comes to pay for them he finds he has but 7 cents in his purse. Since he cannot take 10 cents from 7 cents, he pays 7 cents, and still owes 3

cents. His financial condition may be expressed by -3 cents."

Similar examples may be taken to illustrate to the pupil that when we take a larger number from a smaller in algebra, the result is a negative quantity, and its value is expressed by placing the minus-sign (—) before it.

At this point he should have ample exercises in collecting where both positive and negative quantities occur in the same example. Something similar to the following would be useful: "A boy rows up stream 12 yards, then drifts down 15 yards; he again rows up 20 yards, and drifts back 12 yards; how much progress has he made?" Many similar questions should be given, some furnishing positive results and others negative, so that the pupil may gain a clear notion of both positive and negative quantities. The drill will be valuable also in giving the pupil a clearer understanding of the process of addition when both positive and negative quantities occur in the same column.

Addition.—But little difficulty will arise in addition where all the signs are either $+$ or $-$, as it is necessary simply to add the columns and place before the result the same sign as precedes all the quantities to be added. When, however, the signs differ, it is best to teach at first simply the mechanical process, and then the requirement that the positive and the negative quantities shall be added separately, their difference be taken, and that this result shall be prefaced by the sign which is found before the greater of the two sums. After the pupils have once learned to perform the process of addition

readily, they should then be taught by means of simple examples the reason for placing the sign.

It may be well in illustrating this point to take a practical problem, something similar to the following: "A man earns on Monday \$10, on Tuesday \$3; on Wednesday he loses \$12; on Thursday he earns \$25; on Friday he loses \$6; and on Saturday he loses \$10 more; how much does he save in the week?" This can be written for the pupils in arithmetical form: \$10 + \$3 − \$12 + \$25 − \$6 − \$10 = \$10, or in algebraic form, substituting x for \$, as follows:

$$\begin{array}{r} 10x \\ 3x \\ -12x \\ 25x \\ -6x \\ -10x \\ \hline 38x - 28x = 10x \end{array}$$

Similar examples should be given in which the sum of negative quantities exceeds that of the positive. The transition from these concrete problems will be found quite easy.

Subtraction.—The chief difficulty in algebraic subtraction is to show the child why the sign of the subtrahend is changed. In order to make this clear to the mind of the learner it is best to limit the first questions to positive quantities in both minuend and subtrahend. The learner will have little difficulty in understanding that the expressions, "4 books subtracted from 6 books," "6 books less 4 books," and "6 books minus 4 books," are

substantially the same. In a similar way he may be led to see that $4x$ from $6x$, $6x$ less $4x$, and $6x - 4x$ are the same. The problems may now be written in a different form; as,

From	6 boys,	$6x$
Subtract	4 boys,	$4x$
	2 boys.	$2x$

Suppose that the pupil has been taught the process of addition thoroughly where different signs occur, he will have little difficulty in understanding that the expression $6x - 2x = 4x$ may be written—

$$\begin{array}{r} 6x \\ -2x \\ \hline 4x \end{array}$$

This form shows him the problem in subtraction changed to one in addition; and he has only to perform the addition in order to verify the result obtained by the oral solution in subtraction.

The next point is to show to the learner that the sign is not necessarily really changed, but that we may "think of it" or "conceive it" as changed, and proceed as in addition. It will not be a difficult task, if the pupil have plenty of oral exercises, to show him that the result of thinking of a minus sign as changed makes it a plus sign, or that a plus sign under similar circumstances becomes a minus sign, and that whichever number is the larger, the minuend or the subtrahend, the sign of that number gives the sign to the result.

The teacher should dwell on this matter of changing the sign of the subtrahend until there can be no possibility of mistake. It is safe to say that more than

one-half the errors in algebraic work result from mistakes made on this point.

Transposition.—It frequently occurs in the solution of equations that letters occur in both members of the equation; as,

$$6x + 3 = 5x + 5,$$
$$\text{or } 6x - 4 = 2x + 8.$$

In such cases it is necessary that the letters should all be placed in one member of the equation and the numbers in the other. In the first equation above, $6x + 3 = 5x + 5$, we may get rid of the 3 by subtracting 3 from each side of the equation, which will then stand

$$6x = 5x + 5 - 3.$$

We may also get rid of the $5x$ in the second member by subtracting $5x$ from each member; the equation would then stand

$$6x - 5x = 5 - 3;$$

but this form is the same as if we had changed the sign of $5x$ and of 3, and removed each from one member of of the equation to the other. The pupil will readily see that all that is necessary in changing a quantity from one member of an equation to the other is to change the sign of the quantity as it is removed from one side of the equality-sign to the other. This process of changing a quantity from one side of an equation to the other is called *Transposition.*

The importance of transposing members of an equation should be explained to the pupil, and he should then have sufficient practice in transposition to make him thoroughly familiar with the process and expert in the operation. Part

of these exercises should be for oral practice and part for written.

Forming Equations.—One of the most serious difficulties with which the student in algebra meets is that of forming equations; even many who are able to solve equations readily when once constructed find no little difficulty in constructing equations for themselves from the reading-problems with which they meet.

It is important that the first exercises in forming equations be very simple, and that they increase in difficulty very gradually. Let some of the first examples be similar to the following: "If $3x + 2$ is 4 more than x, what is the proper equation?" "If $2x - 6$ is 2 less than $3x$, what is the proper equation?" The next series of questions may be somewhat as follows: "If 3 times a number + 2 equals once the same number + 4, what is the equation and what is the number?"

It will be found profitable, as soon as reading-problems of any nature are given for solution, for the class to proceed first to construct the proper equations. A large proportion of students find this the first difficulty with which they have to contend, and it is one which sometimes gives them more or less trouble throughout their whole study of the science. It is therefore recommended that where pupils are not able to construct the proper equation, the teacher lead them by judicious questions to construct the equations of a number of similar problems before they begin the solution of any in a lesson. It will be found profitable also to have them sometimes place on their slates or on the blackboard the proper equations for all the problems of a lesson. This will prove a valuable exercise in training

the judgment and the understanding in general. The exercises may be varied by having one pupil construct the proper equations in a problem, and then selecting some one else to solve the equations.

Multiplication.—The first difficulty that the pupil is likely to encounter in multiplication is that the product of like signs produces positive quantities, or *plus*, while the product of unlike signs produces negative quantities, or *minus*.

Multiplying two quantities, each having the plus sign, gives rise to no difficulty.

Multiplying a negative quantity by a positive, as $-6x$ multiplied by 3, is readily explained by showing that

$$\begin{array}{r} -6x \\ -6x \\ -6x \\ \hline -18x \end{array}$$

is the same as $3 \times -6x = -18x$.

Multiplying a positive quantity by a negative, as $4x$ multiplied by -3, may be explained by showing that 4×-3 is the same as $-3 \times 4 = -12$, and this quantity multiplied by $x = -12x$, or $4x \times -3 = -12x$.

In a similar manner it may be shown that in the multiplication of two negative quantities, as -7×-3, the minus-sign before the multiplier 7 means that 7 times the multiplicand is to be subtracted from something. In this case $7 \times -3 = -21$. If this be subtracted, its sign must be changed; hence the product of -7 and -3 is $+21$.

The pupil, having learned previously that the expo-

nent indicates the number of times a letter or figure is used as a factor, will have little difficulty in understanding operations similar to the following:

$$a \times a \times a \times b \times a \times a \times b = a^5b^2.$$
$$a^2 \times a \times a \times b^3 \times b = a^4b^4.$$
$$a^2 \times a^3 \times b \times b^3 \times c = a^5b^4c.$$

To prove himself right, let him resolve given numbers to factors; as,

$$a^3 = a \times a \times a.$$
$$a^2b^4c = a \times a \times b \times b \times b \times b \times c.$$

Multiplication of Polynomials need not be specially explained here, as it presents no difficulties not already met with in multiplication of monomials.

Pupils should memorize the principle that the product of quantities having like signs is plus, and the product of those having unlike signs is minus. It will prove convenient to remember this and have it at command at all times.

Division.—In division the chief thing is to explain to the pupil the division of coefficients first. This will present no serious difficulty. Should he fail to understand the subtraction of exponents, as $6x^5 \div 2x^2 = 3x^3$, it would be best to factor the literal part of the expression thus, $6xxxxx \div 2xx$; or thus, $\frac{6xxxxx}{2xx} = 3xxx = 3x^3$, when he will readily understand that, division being the reverse of multiplication, exponents are subtracted where in multiplication they are added.

He may be taught also that in division the quotient

of quantities having like signs is plus (+), or positive, while that of quantities having unlike signs is minus (−), or negative. This may be illustrated to the pupils as in the case of multiplication, or rather by reversing the process, as follows:

$$\text{Since } a \times b = ab,\ ab \div b = a.$$
$$\text{Since } a \times -b = -ab,\ -ab \div a = -b.$$
$$\text{Since } -a \times b = -ab,\ -ab \div b = -a.$$
$$\text{Since } -a \times -b = ab,\ ab \div -a = -b.$$

Fractions.—Fractions in algebra may be regarded as indicated divisions; they therefore present no difficulties except such as are met with in division, and the method of teaching needs but little further discussion here.

Clearing of Fractions.—Pupils should be taught by means of very simple examples, as $\frac{x}{2}+\frac{x}{3}=5$, to clear equations of fractions. The transition from arithmetical numbers to algebraic can be made readily in the above example. Thus, $\frac{1}{2}$ the cost of a hat plus $\frac{1}{3}$ of the cost equals \$5. The pupil has no difficulty in determining that $\frac{5}{6}$ of the cost equals \$5, and that the total cost is 6 dollars.

Substituting the algebraic form, we have—

$$\frac{x}{2}+\frac{x}{3}=5;$$
$$3x+2x=30;$$
$$5x=30;$$
$$x=6.$$

Factoring.—In order to understand Factoring, and be able to resolve polynomials readily into factors, pupils

must understand thoroughly and have constantly at command the theorems which show the result of

1. *The square of the sum of two quantities;*
2. *The square of the difference of two quantities;*
3. *The product of the sum and difference of two quantities.*

The exercises in illustrating these theorems and in resolving the products into their factors cannot well be too extended. A thorough knowledge of these theorems will not only save a vast amount of work, but it will very greatly facilitate the solution of many problems, by enabling the student to see at a glance how the work of solution may be greatly simplified.

The following additional theorems are also important:

1. *That the difference of two quantities is an exact divisor of the difference of any like powers of those quantities;*
2. *That the sum of two quantities is an exact divisor of the sum of any like odd powers of those quantities.*

Factoring enters largely into the work of solving problems, and the pupil should have frequent exercises not only in applying the foregoing theorems, but also in general factoring and in fractional division by the factoring process.

Elimination.—In elimination it is best that pupils should understand clearly the three methods of elimination, and be required to solve problems readily in all of them, but in their subsequent practice they should be permitted to use that method which may prove most convenient for them.

Radicals.—This topic presents serious difficulties to

most pupils; and it will be found that the cause of the difficulty lies in the fact that pupils are hurried too rapidly in the reduction of radicals. Much time should be spent on this part of the subject. It should be impressed on the mind of the learner again and again that the quantity under the radical sign shall be divided into two factors, *one of which shall be a perfect power of the degree indicated by the radical.*

The teacher should begin with simple exercises, calling first for square factors, then cubic factors, and so on, until the pupil can readily divide numbers into factors, one of which shall be of the required degree. Expressions should then be simplified, as $\sqrt{24} = \sqrt{4 \times 6} = 2\sqrt{6}$, or $\sqrt[3]{24} = \sqrt[3]{8 \times 3} = 2\sqrt[3]{3}$. If the textbook does not furnish a sufficient number of examples, the teacher should select from other textbooks or originate a large number of examples, so that pupils may understand the reduction of radicals thoroughly. Having mastered this part of the subject, pupils will have little difficulty in the application of radicals or in solving equations containing radicals.

Literal Equations.—Literal equations sometimes present serious difficulties to the student. When such is the case, it is best to have him first solve several numerical equations, and then follow with a literal equation having the same form. Of course, there can be no thorough knowledge of algebra without the ability to solve these literal equations quite as readily as the numerical.

The Force of Signs.—Pupils should be taught that quantities between which a multiplication or a division

sign occurs are to be taken together, that *plus* and *minus* signs are simply equivalent to conjunctions, and that every process stops and begins anew when we reach either a plus or a minus sign; that is, something is either to be added to or subtracted from what has preceded. Thus, $a + b \times x - c \div d$ is $a + bx - \frac{c}{d}$, and similarly in arithmetic:

$$3 + \tfrac{1}{2} \times 6 = 6;$$
$$3 + \tfrac{1}{2} \text{ of } 6 = 6;$$
$$3 + 6 \div 3 = 5.$$

The last form becomes very simple the moment we put it in fractional form, as $3 + \frac{6}{3} = 5$.

Suggestions on Teaching Algebra.

1. Do not encourage pupils to begin the study of algebra until they have at least a fair knowledge of arithmetic.

2. Give special attention to such points as seem to give pupils most difficulty.

3. Do not neglect oral and mental solutions; the teacher is frequently able to detect the pupils' weakness more readily by these than by the written work.

4. Simplify the processes as much as possible for beginners, and do not discourage them by attempting to teach too many ways of performing an algebraic operation.

5. See that pupils thoroughly understand the value of the minus-sign, and the effect produced in changing a number from one member of an equation to the other.

6. Teach the various definitions as you come to them; do not discourage the pupil by attempting to have him learn a long list of definitions before he has any use for them.

7. See that the pupil can apply not only every principle that he learns, but that he can also explain it so as to make it intelligible to others.

8. Let pupils have extensive practice both in forming equations and in solving problems. The arithmetic may be used with profit in this way, and algebraic solutions be applied to arithmetical problems.

9. Teach carefully the use of all signs, and show that what is true in algebra with reference to processes indicated by signs is true also in arithmetic.

10. Encourage the timid and uncertain in algebra by giving them easy problems embracing the principles to be taught; select these, if necessary, from other textbooks. Have these pupils also construct simple problems of their own, to show that they understand the principles involved.

11. Do not worry your pupils with special solutions or shortened methods until they have mastered more or less thoroughly the matter and the methods in the textbook, unless you are certain that your method is more simple and more readily understood than that of the book.

12. Begin the work in algebra as far as possible with concrete problems; these will be understood most readily, and they will serve as an introduction to the abstract parts of the science.

13. Show the relation between algebra and arithmetic by making the transition from the one to the other. Show that in arithmetic we solve particular problems, while in algebra we derive general formulæ which will apply to all cases.

CHAPTER IV.

GEOMETRY.

GEOMETRY has been variously defined as the science of Space, the science of Extension, and the science of Form. Form is either pure or real. Pure form is a portion of space limited in idea, but having no content. Real form is a portion of space occupied by matter. Geometry treats of pure form, but the principles of the science may be applied to real form.

The science of geometry is deductive. Indeed, it is usually regarded as the type of all deductive sciences. It has for its basis axioms and fundamental truths, and from these are derived, by the process of reasoning, other truths equally important, but less general in their application. It begins with the general and proceeds to the particular, thus following strictly the course of deductive reasoning.

The term *geometry* is derived from the Greek *ge*, the earth, and *metron*, a measure, and means, literally, "earth-measuring." Whether it was ever limited in its application to what we know as land-surveying or land-measuring is now a disputed question. It is fair to presume, however, that in the early stages of development this science, like all others, had its first growth in connection with the concrete, and that its abstract principles are the outgrowth of practical observation.

Methods of Teaching Geometry.

The science of geometry proper cannot be taught to young children. The processes of geometrical reasoning require minds more fully matured and more thoroughly disciplined than we should expect to find in the child of average capacity.

Children may, however, at an early age be taught to distinguish the most important geometrical forms and name them, and they may also be taught, by means of objective illustration, to comprehend some of the most important geometrical truths and the application of these truths in actual measurements.

In teaching children to distinguish between geometrical forms it must, however, be borne in mind that we are not teaching geometry, any more than teaching the various shapes of animals could be regarded as teaching zoology.

Geometrical Forms. 1. **Lines.**—The differences in forms, it will be found, are most readily taught by means of object-lessons. We may thus not only teach the meaning of a line, but also the difference between straight and curved lines, and show that a broken line is simply a combination of straight lines.

Positions of Lines.—Pupils should be taught to distinguish readily the various positions of lines, and be able to name them, as *parallel*, *oblique*, and *perpendicular*, *horizontal* and *vertical*, *converging* and *diverging*. Their knowledge should then be verified by requiring them to draw lines in various positions as the teacher may dictate.

2. **Angles.**—The idea of an angle may readily be taught by means of lines on the blackboard or with two sticks

or pencils in the hands of the teacher. The pupils may readily be made to understand that when two lines are drawn in different directions from a common point, the difference in direction of these lines is called an *angle.*

The idea of a *right angle* is best taught by calling the pupil's attention to the corner of a slate or a door or the corners of the room, and showing that in a right angle the two lines which form the angle are always perpendicular to each other. When he has acquired the correct notion of a right angle he should be required to point out all the examples possible, as the corners of the blackboard, the corners of the floor, etc. He may next be taught the meaning of the word *acute* as being sharp, and it may be shown that any angle which is sharper or more pointed than a right angle, and which is therefore less than a right angle, is called an *acute angle.* In a similar way he may be taught the word *obtuse* as meaning blunt, and apply the term to all angles that are greater than right angles. He should then have numerous exercises in naming angles as selected, and in drawing them as required.

3. Surfaces.—In teaching the various surfaces the easiest plan is to place in the hands of pupils a certain number of sticks, as *three,* with which to form *triangles; four,* to form *quadrilaterals; five,* to form *pentagons;* and so on. After figures have thus been constructed with sticks, the pupils should be permitted to form required figures of lines on the blackboard or on the slate, and at the same time be taught the general names *triangle, quadrilateral,* etc.

Triangles.—In teaching triangles let pupils be taught that a triangle having a right angle is called a *right-angled triangle,* that one having an obtuse angle is called

an *obtuse-angled triangle*, and that one whose angles are all acute is called an *acute-angled triangle*.

Pupils may be taught also that triangles are named according to the relation of their respective sides. Thus, one whose three sides are equal is called an *equilateral triangle*, one having two sides equal, an *isosceles triangle*, and one whose sides are all unequal, a *scalene triangle*. Having learned the differences in triangles, either as to angles or as to sides, the pupils should have actual practice in the construction of each kind, and be required to name the kind of triangle as they construct it.

Quadrilaterals.—In teaching the four-sided figures the teacher may show that those whose opposite sides are parallel are called *parallelograms*, those having only two sides parallel are called *trapezoids*, and those having no sides parallel, *trapeziums*.

He may also show that parallelograms are divided into *squares* and *rectangles*, *rhombuses* and *rhomboids*, explaining that *rectangles* have their opposite sides parallel and all their angles right angles, and that the *square* is a special kind of rectangle whose sides are equal. He should show also that a *rhombus* has its sides parallel and equal, but that its angles are not right angles, and that a *rhomboid* differs from a rhombus only in having unequal sides.

Let the pupil not only name these figures, but also construct them, and show wherein they agree or differ.

The Circle.—In teaching the circle lead pupils to distinguish between the circle and its circumference. Many pupils confuse the two, considering the circle the circumference, instead of the space included within the circum-

ference. The various parts of the circle may then be taught and named, as *radius, diameter, chord, arc, segment, sector, quadrant, semicircle, semi-circumference.* The division of the circumference into *degrees* may be explained to pupils who have advanced sufficiently far to understand it. The manner of drawing a circle and the different parts of it may also be explained.

Polygons.—Pupils should have practice in drawing and naming the kinds of *polygons*, as *pentagons, hexagons, octagons*, etc., and the meaning of such terms as *perimeter, area, regular*, and *irregular*, should be made clear as soon as pupils are prepared to understand them.

4. **Volumes.**—These are most readily taught by means of models. Where the teacher finds it impossible to secure models by other means, he may substitute various objects that will enable him to illustrate. Thus, a marble or a ball may represent the *sphere*, a lead-pencil or a piece of broom-handle, a *cylinder*, a pencil-point, a *cone; cubes, prisms, pyramids*, etc. may be cut from apples, potatoes, or wood.

Geometrical Truths.—Pupils are able to comprehend certain geometrical truths long before they are able to understand the reasoning process by which we arrive at the truths themselves. Many theorems are susceptible of concrete demonstration; that is, they may be illustrated in such a way as to be comprehended by the pupil without a process of reasoning. A few of these theorems are given below:

1. *If one straight line meet another straight line, the sum of the two adjacent angles will be equal to two right angles.*—This may be shown by means of a piece of

paper having a straight edge. Let an oblique slit be cut into the paper from any point on the straight line represented by the edge; this will divide the paper into two angles. Now let a second slit be cut from the same point, but perpendicular to the edge; this will divide the surface into two right angles, but it will be seen at a glance that these two right angles equal the two angles originally cut.

In a similar manner it may be shown that *The sum of all the angles formed on one side of a straight line by drawing lines from the same point is equal to two right angles;* also, that, since there are but two sides of a straight line, *All the angles about a common point are equal to four right angles.*

2. *When two straight lines intersect each other the opposite or vertical angles which they form are equal.* This may be shown by drawing two straight lines on a piece of paper in such a way as to intersect. If one of the angles formed is cut from the paper and applied to its opposite, they will be found to coincide.

3. *When two triangles have two sides, and the included angle of one respectively equal to two sides and the included angle of the other, the two triangles are equal.*— This may be shown by cutting one triangle from paper and then drawing another on paper, making the two sides and the included angle agree with the two sides and the included angle of the given triangle. Completing the triangle by joining the extremities of the two sides, it will be found that when one triangle is placed on the other they coincide and are equal.

By a similar process it may be shown that *When two angles have two angles, and the included side of the one*

equal to two angles and the included side of the other, respectively, the triangles are equal.

4. *The sum of the three angles of a plane triangle is equal to two right angles.*—This may be shown by cutting a triangle from paper, and then cutting off two of the angles and placing them one on each side of the remaining angle. It will be found that they equal three angles meeting at a common point on the same side of a straight line, and therefore equal two right angles.

5. *The area of a rectangle equals the product of the number of units in the base multiplied by the number in its altitude.*—This may be shown by drawing lines parallel both to the base and to the perpendicular, dividing the rectangle into unit-spaces, when it will be found that the number in the rectangle equals the number in the base multiplied by the number in the perpendicular. It may be shown also by first drawing the lines on a sheet of paper and then cutting the paper into squares of one unit each.

The area of any parallelogram may be explained by cutting the figure out of paper, and then cutting off the triangular portion at one end by a line perpendicular to the base, and fitting it on at the other to show that every parallelogram may be converted into, or is equivalent to, a rectangle having the same base and altitude.

6. *The area of a triangle is equal to one-half the product of its base and altitude.*—This can be illustrated by cutting a number of parallelograms from paper and dividing them diagonally, so as to show that in every case a triangle is half a parallelogram; and since the area of a parallelogram equals the product of its base and altitude,

the area of a triangle, which is half a parallelogram, is just one half as much, or half the product of its base and altitude.

7. *The area of a trapezoid is equal to the sum of its two parallel sides multiplied by one-half the altitude.*—This may be shown readily by cutting the trapezoid diagonally, so as to show that it is equal to two triangles.

8. *The square described on the hypothenuse of a right-angled triangle is equal to the sum of the squares described on the other two sides.*—This may be shown by drawing a right-angled triangle on paper, having the three lines each a certain number of inches in length, as 5, 4, 3, or 10, 8, 6. Let a square be constructed on each of the three sides, and divide each of these squares into inch-squares. In every case it will be found that the number of inch-squares formed in the square described on the hypothenuse equals the number contained in the squares described on the other two sides.

9. *A perpendicular is the shortest line that can be drawn from a point to a plane.*—This may be shown by attaching a string to any point overhead, and shortening it so that it just touches a table placed beneath when the line is perpendicular. The pupils will readily see that as soon as the string is moved out of the perpendicular the line is found to be too short.

10. *The volume of a parallelopipedon is equal to the product of its three dimensions.*—This may be shown readily by taking any box whose inside dimensions are multiples of an inch and filling the box with inch-cubes.

These concrete demonstrations will be found valuable not only in teaching these geometrical truths as such, but also frequently in enabling the student to compre-

hend more clearly and more readily the process of reasoning by which they are usually reached.

The Science of Geometry.—When pupils have once reached that stage of advancement where it is thought they can understand and originate geometrical demonstrations, it is well that they should study a textbook on geometry.

Definitions and Axioms.—The usual plan in textbooks on geometry is to present the axioms and definitions of the science in the beginning, and these the pupil is expected to memorize so as to be able to apply them at any time. It is doubtful, however, as to the wisdom of requiring a pupil to memorize any definition until he has use for it. It seems better, therefore, that the definitions at least should be scattered through the book in such a way as to present themselves when they are needed.

When definitions in geometry are taught, the teacher should not be satisfied with the mere repetition of the words. He should see that the pupil understands the definition by having him illustrate it. Thus, if the pupil define an angle or the different kinds of angles, let him draw one of each on the blackboard. The teacher should see also that each definition is strictly accurate. The pupil cannot hope to improve on the language of most geometrical definitions, which have been worded by the best mathematicians of the world.

Reasoning.—The two chief methods of reasoning in geometry are the *Direct* and the *Indirect*. The *Direct* method of demonstration proceeds to prove a truth by referring to axioms, definitions, or previously-proved

propositions, and thus reaches a conclusion which cannot be questioned.

The *Indirect* method, known also as the *reductio ad absurdum*, proceeds by supposing that the proposition to be proven is not true. It establishes hypotheses which contradict the proposition, and reasons on these hypotheses until a conclusion is reached which contradicts some known or established truth. The proposition is proved true by showing that the original hypotheses are false. A proposition is frequently thus proven by showing that its opposite cannot be true. Either method of proof may be used, but in general the direct method, wherever applicable, will be found the simpler of the two.

Original Demonstrations.—Nothing is more conducive to clear geometrical reasoning than having pupils give demonstrations of their own. Authors of textbooks on geometry who have set apart a number of undemonstrated theorems which the pupils are required to demonstrate for themselves deserve very great credit. Many a student in the past has seemingly studied geometry for months without his teacher having discovered the fact that he was simply committing to memory not only the propositions, but also the argument. Original demonstrations will prevent any such practice, and at the same time lead the pupil to strengthen his reasoning powers by giving them practical exercise.

Mensuration.—The study of geometry may be made practical and useful not only by the valuable exercise which it affords to the reasoning powers, but also in the application of its principles to the solution of practical problems in measurements. Mensuration should be

taught with geometry, and every textbook on the latter science should have a sufficient number of problems to afford the student an opportunity to apply the principles in practice.

Suggestions on Teaching Geometry.

1. When pupils are called upon to recite, have them construct the diagrams from memory and without the use of a ruler.

2. Have pupils arrange the letters of the diagrams differently, or substitute others for those used in the textbook. The use of figures instead of letters is not to be commended, as they frequently confuse the pupil, particularly if he be a beginner.

3. Assign the work promiscuously, unless your students differ greatly in ability. In such case the timid or backward should be encouraged by giving them some of the easier demonstrations.

4. Require the pupil when making an explanation or giving a demonstration to face the class as nearly as possible, and hold the pointer in the hand nearest the blackboard.

5. Have pupils write out the important equations and symbols on the board, so that both the teacher and the pupils who listen may follow the demonstration readily.

6. Encourage pupils to give original demonstrations; this will train them to think and reason for themselves.

7. Be careful to see that pupils do not commit to memory the steps of reasoning. The number of pupils who attempt to memorize the demonstration as given in the textbook is remarkably great.

8. When pupils have not all an opportunity to demon-

strate orally in the same recitation, require a portion of the class to write out on paper the demonstrations of one or two theorems, so as to keep all in practice and give all the benefit of the reasoning.

9. Require pupils to illustrate any axioms or definitions which you may have reason to believe they do not fully understand.

10. See that every point and every demonstration is clearly understood before permitting a pupil to pass on to another. If this plan be pursued, pupils ought to have little trouble in comprehending and mastering the science.

PHYSICAL SCIENCE.

CHAPTER I.

The Elements of Physical Science.

The Physical Sciences are those which treat of the physical or material world. So many new facts and truths in this department of science are discovered from time to time, and the sciences themselves so interlace, that it seems hardly possible to suggest a classification which can be considered as strictly satisfactory, and no complete or satisfactory classification of them has ever yet been made. The following are among the most important of the physical sciences to be taught: Natural History, Physiology, Natural Philosophy, Astronomy, Chemistry, Geology, and Geography.

The *Basis of Physical Science* is physical facts and phenomena, and these in turn depend for their value upon the uniformity of Nature in her operations. By observation of these facts and phenomena we are enabled to classify them and derive the general causes which produce them, as well as determine the laws by which they are governed.

It is not meant to discuss here in detail the physical sciences nor the methods of teaching them, but rather to

show how the *Elements of Physical Science* may be taught to at least a limited extent in all grades of schools. All that the teacher of rural or ungraded schools can hope to do is to acquaint his pupils with some of the facts and principles of the most useful of these sciences. The discussion of Geography is given more at length here, because it is one of the recognized studies in every school-course.

I. The Value of Physical Science.

1. **Physical Science is Valuable for the Practical Knowledge which it Affords.**—The importance of a knowledge of the elementary facts of physical science is beginning to assert itself among progressive teachers everywhere, and the time is not distant when it will not only claim, but also receive, proper recognition at the hands of all interested in true education. As has been aptly said by Dr. Wickersham with reference to the usefulness of these sciences to man, "They treat of the light by which he sees, the heat by which he is warmed, the air which he breathes, the earth from which he draws his sustenance, and the animals and plants that minister to his wants." They treat also of his body, the food he eats, and the manner in which it ministers to growth and strength, as well as the means by which he may preserve both life and health.

2. **Physical Science is Valuable as a Mental Discipline.**—It gives exercise to almost every faculty of the mind. It is particularly valuable for the culture which it gives to perception. The proper study of physical science requires pupils to give close and critical attention to the facts and phenomena investigated. The observation of

these facts and phenomena is necessarily accurate, and the power of perception is quickened and strengthened. No other branch of science is so effective in giving culture to perception. Physical science affords valuable culture also to memory, to the imagination, to the understanding, and even to the reason.

3. **Physical Science is Valuable for the Data which it Affords for Inductive Reasoning.**—This will readily be seen from the fact that in building up any physical science the truths are derived entirely by the process of induction. In learning a physical science the student first observes individual facts, and then seeks causes; he first observes the phenomena, and then inquires into the general laws and principles by which these phenomena are governed. The process is strictly in accordance with the principles of induction, and the practice afforded proves specially valuable in giving the learner exercise in inductive reasoning.

While the investigations of physical science give valuable training in the process of inductive reasoning, the plan of teaching may be either inductive or deductive. We may, for instance, show by actual experiment that heat expands iron; we may show also, by actual experiment, that heat expands tin, copper, zinc, and other known metals; and from this we may derive and teach the general truth that heat expands all metals. This general principle is reached wholly by the process of induction. We may also teach the general principle, first, that heat expands all metals, and then apply the law to the particular metals already known and to those hereafter discovered. We reach the principle by induction, and make the application of it by deduction to all

subsequent facts and phenomena that may be included under the general law.

4. **Physical Science is Valuable for the Training which it Gives in Classification.**—The classifications in physical science are the most logical to be found in the whole domain of science. The arrangement into kingdoms, orders, genera, species, etc., as given in botany, zoology, and other physical sciences, is a model of perfect classification. No other sciences afford such valuable training to those powers of the mind which classify and generalize, and thus reach and establish general laws and principles.

5. **Physical Science is Valuable in Counteracting the Dogmatic Tendency of Deductive Science.**—The tendency of deductive science is to make thinkers dogmatic and arbitrary. The general principle having been established and promulgated, all facts must be made to conform to the law. Inductive reasoning, on the other hand, tends to make the thinker patient in his investigation of truth. He soon learns that hasty generalizations often lead to incorrect conclusions. Hypothesis after hypothesis may be established, only to be rejected and cast aside as it is found to be untrue; and so the process continues until some hypothesis is verified, and thus a theory is reached. It is said that Kepler established and rejected nineteen hypotheses before he discovered the theory of elliptical orbits. Most theories are merely verified hypotheses. Thus, the theory of universal gravitation, the Copernican theory of the solar system, and others, each was originally a hypothesis, or what La Place called a "great guess."

The student of physical science observes facts, investigates patiently, often finds himself mistaken, and only

through a long train of experiments and observations reaches the truth. He is modest in his statements, because none know so well as he how easy it is to reach an incorrect conclusion unless all the facts and all the phenomena are closely observed and their relations to other facts and phenomena correctly noted. It would prove valuable mental discipline for every student of either mathematical or metaphysical science were he to pursue also a course of study in physical science. The tendency in our schools to devote the greatest portion of the time to mathematics might be corrected by the introduction of the elements of physical science, even if nothing more could be done than to give a short oral lesson on some topic once a day to the school.

The utility of the physical sciences cannot well be questioned. They make man acquainted not only with the inorganic world, with which he has to do in almost every calling in life, but also with the organic world, of which he himself is an important part. By means of these sciences he becomes acquainted with his own environment and the relation of his surroundings to himself. He also gains a knowledge of himself and his physical constitution, which is necessary not only to preserve health, but also to prevent untimely or premature death. Physical science enters into almost every calling in life. Indeed, it lies at the foundation of all our industries and physical advancement.

Physical science had its origin to a great extent in the physical necessities of mankind. It was thus that railways were built, canals were dug, houses were erected for shelter, manufactories were established to give us clothing and furnish food and labor-saving machinery, ships and

steamers were put on the ocean to carry and exchange the products of various countries; in short, viewed from a utilitarian standpoint, nothing has done more to ameliorate the condition of man and lift him to a higher plane of civilization than the application of the principles of physical science to his daily wants.

The facts which form the basis of physical science lie all around us, and we could not escape them if we would. They crowd upon us from every direction, demanding recognition; and that is not only a faulty system of education, but also a pernicious one, which ignores their importance. The great utility of physical science to every member of the human family, and the fact that a knowledge of the various physical sciences is so readily acquired and an interest in them so easily aroused, ought to ensure them a warm welcome in every course of study.

II. The Sciences to be Taught.

In teaching physical science in the public schools nothing more than the elements should be attempted in grades below the high school. The following are the chief sciences whose elements may be presented in an interesting form by the teacher, and whose primary facts and principles may be made matters of observation for the child's own mind: Zoology, Botany, Mineralogy —these three being known as Natural History, which treats of the three kingdoms, animal, vegetable, and mineral—Physiology, Natural Philosophy, Astronomy, Chemistry, Geology.

All of the foregoing branches are important in training pupils to habits of observation and reflection, but some of them are specially important in their bearing

on the practical affairs of life. Zoology, Botany, and Mineralogy, all furnish valuable information for the agriculturist. The same may be said of Chemistry, and to some extent of Natural Philosophy. The farmer who has a knowledge of these cannot fail to be more successful than one who is ignorant of them. Natural Philosophy is important also to the mechanic, and his success depends to a great extent upon his knowledge of the leading principles and laws of this science. A knowledge of Physiology and Hygiene is indispensable to every one, no matter what his calling in life may be. This science concerns the individual physical welfare of us all, and there is no branch of science, physical or otherwise, that deserves so much attention or that has stronger claims to a prominent place in the course of study.

III. Suggestions on Teaching the Elements of Physical Science.

1. Oral Instruction.—The teaching in elementary science should be almost wholly oral. Everything in the nature of a formal recitation should be carefully avoided at first.

2. Observation.—The child's natural method of acquiring knowledge is by using its senses. Nature presents everywhere facts and phenomena full of interest to the child, and it in turn gleans knowledge by following the bent of its own inclination as Nature directs. The first work of the teacher, therefore, consists in encouraging the child to observe, but he should also see that the child's observations are made systematically, otherwise there will be much misdirected effort.

3. Expression.—"Observation," says Pestalozzi, "is the

absolute basis of all knowledge. The first object, then, in education must be to lead a child to observe with accuracy; the second, to express with correctness the result of its observation."

4. Objective Teaching.—Objective teaching embraces two methods of procedure—first, *Perceptive Teaching*, or that in which the object is placed before the pupils for them to examine and observe for themselves; and, secondly, *Conceptive Teaching*, in which impressions previously made through perception are recalled and utilized, the objects not being present to the senses. A lesson on any object previously perceived, but not now present, would necessarily involve conceptive teaching.

5. Familiar Objects.—The first instruction in physical science should be in connection with familiar animals, plants, and minerals, for the reason that the child has already some knowledge of these. Care must be taken, however, that the lessons on these be not continued so long as to weaken the child's interest.

6. Pictures.—Real objects are preferable in teaching physical science, but where these are not procurable use pictures or models, or other sensible representations of objects.

7. Scientific Terms.—As far as possible, the use of technical terms should be avoided in teaching natural science to beginners. The time to be scientific has not yet come. It is not science that the pupils need so much as it is the training of accurate observation of physical facts and phenomena.

8. Self-Help.—Where it is possible for a pupil to discover a fact for himself the teacher should give no help. This was the secret of success in much of Agassiz's teach-

ing. When requested on one occasion to give some instruction on insects before a teachers' institute, he went out and collected several hundred grasshoppers and placed them in the hands of the teachers, directing each person to examine the insect for himself. He says: "The examination had not been carried on long before every one became interested, and, instead of looking at me, looked at the thing. And they began to examine, and to appreciate what it was to see and see carefully." Every pupil should be encouraged to see for himself, and then give expression to his own thoughts.

9. **Definitions.**—If definitions are given at all, they should be such only as are necessary. A few technical terms, as *organic*, *inorganic*, *mineral*, etc., must necessarily be used, and these may be defined, but the pupil should be led to the definition by the inductive process, rather than have the definition ready-worded for him.

10. **Questions.**—The teacher may lead the pupil to discover many facts and peculiarities about the objects examined by appropriate questions judiciously put. This also was one of the features of Agassiz's teaching. Instead of pointing out a fact, he directed the pupil to *observe*. It is also in accordance with all proper object-teaching, in which the pupil, after having told what he knows, is led to discover new facts and additional knowledge for himself.

11. **Tangible Illustrations.**—Frequently, where it is impossible to bring an object before a class, a similar object may be used for the purpose of illustration. Thus, in order to explain respiration and human lungs, let the lungs of a sheep or a calf be brought to class to be examined by the pupils. In a similar manner, the

heart, arteries, windpipe, bones, eyes, and other organs of a sheep or a calf may be used to illustrate objectively similar human organs.

12. **Experiments.**—Where experiments are performed, let them be such as the children can readily understand. The pupils should also be permitted to conduct experiments for themselves. The apparatus to be used in these experiments need not necessarily be expensive. The lever can be illustrated quite as readily by means of a lead-pencil or a stick as with the most highly-polished bar of steel. All the mechanical powers may be illustrated and explained with apparatus that need cost but little. Pop-guns, bits of rubber, marbles, putty-blowers, strings, screws, spools, and numerous other articles whose home is the boy's pocket, may be made to illustrate laws in Natural Philosophy, and the experiments performed with these simple articles will prove none the less practical and valuable because of the simplicity of the apparatus.

13. **Conversational Lessons.**—The exercises in elementary science-teaching should be mainly conversational. Pupils should be permitted to ask all questions of possible interest relative to the objects examined, and where facts are not developed by the pupils the teacher should question, so as to direct the learner in the proper channel of investigation. The skillful use of questions is the teacher's chief means of awakening thought.

14. **Associated Facts.**—Associated facts are not always scientifically related. Thus, the uses of animals and anecdotes concerning them have no relation, scientifically considered. Pupils should, however, be permitted to follow their own line of observation, and associate such

facts as to them seem most interesting. The scientific details and outlines may be taught later. Many of the facts, especially those relating to Natural History, pupils will observe for themselves out of school.

15. **The Teacher's Preparation.**—It is impossible for any teacher to present the subject of elementary physical science in any of its departments in an attractive and interesting way without being personally interested in the study, and without having made himself practically familiar with the most important parts of the science. Nor should he attempt to give any instruction in science to beginners unless he has made special preparation to awaken their interest in the subject.

16. **Common Phenomena.**—Special attention should be given to such phenomena as the pupil can observe for himself and such as arouse a spirit of inquiry in his mind. Thus, the phenomena of rain, fog, dew, ice, and snow, the crystallization and stratification of minerals, the origin of springs, and the habits of animals and plants, should all be made subjects for his observation and study.

17. **School Cabinets.**—Whatever the grade of the school, let cabinets be formed, and, if possible, let the objects contained in the cabinet be properly classified by the teacher. Encourage pupils also to add specimens to the school cabinet, and thus keep up the interest permanently.

18. **Practical Knowledge.**—"If scientific training is to yield its most eminent results," says Huxley, "it must, I repeat, be made practical." Do not be satisfied to tell a scientific fact to the learner; let him show for himself that it is true. Even let him doubt until he sees the

proof for himself. Do not rest satisfied with showing him that water expands by freezing; let him fill a bottle with water and try the experiment for himself. Let him handle the plants, animals, and minerals, and examine them, in order that his knowledge may be practical rather than theoretical.

19. **Encourage Curiosity.**—You cannot hope to answer all the questions that interested pupils may be inclined to ask, but do not on that account repress their inquisitiveness. The more thoroughly you can arouse their curiosity, the more successful will be your teaching. Most scientific men are indebted for all they know of science to a spirit of curiosity, by which they were urged forward in their investigations.

20. **Textbook Knowledge.**—Nowhere is mere textbook knowledge of so little value as in physical science. The pupil who merely commits to memory scientific statements and copies outlines of classification, without that practical information which is gained only by experiment and observation, has but a meagre knowledge of physical science.

21. **The Uses of Objects.**—In the early steps of physical science explain to pupils as far as possible the uses of objects. Thus, in Botany the uses of certain plants may be taught, showing that some are valuable for furnishing such beverages as coffee and tea, that some are valuable for clothing, others for building-materials, and still others for their medicinal properties or their fruits. In a similar manner, the uses of various animal and mineral products may be taught.

22. **Personal Knowledge.**—In the subject of Physiology much practical knowledge of a personal nature may be

imparted in the shape of hints or suggestions on hygiene. The pupil will need to learn but little of anatomy except to show the location and the importance of the various bodily organs. Teaching the child the names of the various muscles, nerves, etc. is simply wasted time. Only such terms should be introduced as are really necessary to understand the physiology and hygiene of the human system.

A very full knowledge of the physiology of the human body, together with the laws of hygiene, should be taught. How to prevent taking cold, how to protect the teeth from decay, how to keep the stomach and the lungs in a healthy condition, how and when to bathe, how to tie a severed artery, how to breathe only pure air, how to prevent headache, and a thousand other equally important facts—indeed, everything that would tend to make our bodies healthful and beautiful—might be taught in an incidental way while the teacher is conveying instruction on Physiology and Hygiene.

Give practical directions for preserving health. Discuss fully with your pupils the subjects of ventilation, food, sleep, rest, work, play, bathing, regular habits, the uses and abuses of the body, until you make them realize the importance of health and lead them to form only such habits as are conducive to health and longevity of life.

23. Classification.—One of the chief benefits to be derived from the study of natural science is the training that it gives to the power of classification, which, however, should be the last step in the process of teaching physical science. Children should be led to see only the chief differences at first, and when they are prepared

to divide objects into groups according to similarities or peculiarities let them use the simplest possible terms to indicate the basis of division. The scientific terms may be taught to better advantage when the pupil is once prepared to study a textbook.

24. **Blackboard Work.**—As the pupils proceed in science-lessons they should be required to reproduce the lessons on the blackboard, particularly when classifications are made or synopses have been previously drawn by the teacher. These synopses, however, should be employed only after the pupil has had considerable practice in observing and examining a number of objects that are similar, so that he may derive his law or principle wholly by the process of induction. The process of classification is naturally objective. Pupils should be led, for instance, to note the chief peculiarities of various animals, then the peculiarities found in a number of different kinds, as cud-chewing in the cow, the sheep, the goat, etc. In this manner the teacher may lead them to classify for themselves and draw synopses, which they ought to be able to reproduce on the blackboard at any time.

25. **Enthusiasm.**—In the department of Physical Science the enthusiastic teacher is almost certain of success. Nowhere else can so much interest be aroused as in this department of knowledge, for nowhere else can the learner gain knowledge so readily through the different senses or appreciate so highly the knowledge he acquires.

CHAPTER II.

Geography.

The term Geography is derived from the Greek *ge*, the earth, and *graphein*, to write. Literally, it means a description of the earth. It therefore includes a narrative not only of the various changes which have been produced by man, but also of those which have been caused by Nature. It considers not only the earth itself, but all that is connected with the earth. Hence in its true sense it includes many sciences—Botany, Zoology, Mineralogy, Geology, Climatology, and others. It is not so much a distinctive science as it is a collection of facts and principles belonging to various sciences.

The usual division of this science is into *Political Geography*, or that which relates to man and the changes he has wrought on the earth, and *Physical Geography*, or that which relates to Nature. Various other terms are used at times, as Mathematical, Local, Historical, etc., which do not, however, represent logical divisions of the subject. For the practical purposes of teaching probably the best division is into *Descriptive Geography*, or that which relates the facts and describes the conditions, and *Physical Geography*, or that which explains the causes and accounts for the various physical phenomena.

Methods of Teaching Geography.

The two chief methods of teaching Geography are known as the *Synthetic* and the *Analytic*. The first of these begins with the geography of the home or the neighborhood, and proceeds gradually to the world at large. The second begins with the world as a whole, and then proceeds to the divisions, the subdivisions, etc. Much similar to the analytic and the synthetic method are the *Deductive* and the *Inductive*. The inductive begins with individual facts, and proceeds to general laws and causes, while the deductive begins with the general laws, and proceeds to the individual facts. The inductive and the deductive method apply more directly to the teaching of Physical Geography.

The Analytic Method.—The analytic method of teaching Geography begins with the globe as a whole. It divides the surface of the earth into land and water. It subdivides land into continents, islands, peninsulas, etc., and water into oceans, seas, lakes, rivers, and so on. It again subdivides these, as continents into grand divisions, and these again into countries, states, etc., until the smallest political division is reached.

Advantages.—It is claimed by the advocates of this method that it has the following advantages:

1. It enables the teacher to use the globe in the first stages of geographical teaching.

2. It gives a more correct view of the relation and the comparative size of the different countries, divisions of water, etc., than can be acquired by the synthetic method.

3. It enables the teacher to explain the causes of day and night, the changes of seasons, and other astronomical features of the science.

4. It proceeds from wholes to parts, and thus follows the general law of acquisition.

The Synthetic Method.—The synthetic method of teaching Geography is the opposite of the analytic. It begins with the geography of the home, the school-grounds, and the neighborhood, and proceeds from these to the larger political divisions in turn, according to their importance, until the entire globe is embraced in the pupil's knowledge. It begins with the island, the hill, the valley, the pond which the pupil can see, and from these proceeds to the continent, the mountain, the river, the lake, the ocean, etc., which he can appreciate only by the comparison which he is led to make between these and the nearer objects with which he is familiar.

Advantages.—The chief advantages of the synthetic method, which may really be called the new method, are as follows:

1. This method of teaching illustrates by means of familiar objects, and therefore creates more interest than can be aroused by the analytic method.

2. It proceeds from the known to the unknown, beginning with the perception of the known and proceeding to the conception of the unknown.

3. It presents that geographical knowledge first which is of most importance to the pupil—namely, that of his own neighborhood and his own State.

4. It gives the learner definite ideas as to the meaning of geometrical terms, from the fact that he begins with

concrete illustrations, which have to him a definite signification.

5. It proceeds from individual facts that are well understood by the pupil to the laws and causes governing these facts, and thus accords with the requirements of inductive teaching, which should characterize all elementary work.

6. It gives the pupil such a basis for geographical study as will enable him to acquire a general knowledge of the science for himself should his school-time be short or his opportunities for securing an education be limited.

In speaking of the manner of teaching Geography, Agassiz says: "Let us not at first resort to books, but let us take a class into the fields, point out the hills and valleys, rivers and lakes, and let the pupils learn out of doors the points of the compass; and then, having shown them these things, let them compare the representations with the realities, and the maps will have a meaning to them. . . . . When I was in the college of Neufchâtel I desired to introduce such a method of teaching Geography. I was told it could not be done, and my request to be allowed to instruct the youngest children in the institution was refused. I resorted to another means, and took my own children—my oldest, a boy of six years, and my girls, four and a half and two and a half years old—and invited the children of my neighbors. Some came upon the arms of their mothers; others could already walk without assistance. These children, the oldest only six years old, I took upon a hill above the city of Neufchâtel, and there showed the magnificent peaks of the Alps, and told them the names of those mountains

and of the beautiful lakes opposite. I then showed them the same things on a raised map, and they immediately recognized the localities, and were soon able to do the same on an ordinary map. From that day Geography was no longer a dry study, but a desirable part of their education."

There is no doubt that for beginners the synthetic plan of teaching is much the better, while for advanced teaching the analytic is preferable, though the two should be combined. The synthetic plan should be employed at least until the learner is familiar with the ordinary geographical terms and their meaning, in order that he may study all portions of Descriptive Geography intelligently.

The Plan of Teaching.

For convenience, the subject of Descriptive Geography may be divided into Primary and Advanced.

The elementary or primary course includes that part of the subject which presents the fundamental truths and the chief terms of the science. It embraces several stages, as follows:

1. The *Perceptive Stage*, in which pupils observe facts for themselves.

2. The *Conceptive Stage*, in which ideas of geographical facts are formed from the pupils' knowledge of similar facts.

3. The *Explanatory Stage*, in which the child is made to acquire a knowledge of geographical facts through explanations and illustrations.

The Perceptive Stage.—The first step in the synthetic method of teaching Geography is to acquaint the learner

with such geographical facts as he can observe for himself. Many of these facts have been long familiar to him, and they will be all the more interesting when he finds that they constitute a part of the new science which he is about to study.

Lessons.—These object-lessons—for they are properly such—may include simply lessons on the divisions of *land*, as hills, valleys, plains, islands, etc.; also, lessons on the divisions of *water*, as springs, ponds, brooks, creeks, and rivers. If a more extended course of lessons is thought desirable, it may be made to include lessons on *animals*, both wild and domestic, lessons on *plants*, lessons on *minerals*, lessons on the *atmosphere*, lessons on *people*, lessons on *soil*.

The Method.—In teaching by this plan much of the instruction must necessarily be oral and all of it concrete. Many of the divisions of land can readily be seen from the school-room door. The same is true of divisions of water. Where this is the case, it is folly to waste time in taking pupils away from the school-house to learn things which they already know. Most of the pupils, for instance, know a hill, a valley, a brook, a creek, and other objects to be found in their own neighborhood. To take pupils out of doors to look at these objects that are entirely familiar to them is therefore useless in teaching. It is necessary to have the children apply their power of observation only where the object is not familiar. For example, the pupil may frequently have noticed two bodies of land connected by a narrow portion, and yet he may not know that such a portion of land is called an *isthmus*. He may also frequently have seen points of land projecting into the water, and yet

he may not know that such a point of land is called a *cape*. These are some of the terms, therefore, which he should learn by this perceptive process.

The Moulding-board.—What is known as the moulding-board or moulding-pan will prove specially useful in connection with lessons given during the perceptive stage. A broad, shallow pan in which is placed some clay is a very valuable and convenient piece of apparatus. The clay may be moulded into hills, valleys, islands, capes, isthmuses, and the like; and around these water may be poured to form straits, bays, and streams. The student not only defines a term, but he is enabled here to show, by moulding a portion of the clay in such a manner as to give a practical illustration, that he also understands it.

2. **The Conceptive Stage.**—The child having learned many geographical facts through the process of observation or by the faculty of perception, will be enabled to comprehend many others which it is not possible to reach through observation. Of these it can form ideas only through the process of conception. The process of perception thus becomes necessary to the process of conception. We learn the unknown only as we are able to comprehend it through a comparison with the known. Thus, through our knowledge of a hill we may form an idea of a mountain, or through our knowledge of a pond we may form an idea of a lake.

Lessons.—The lessons in this stage will include all objects with which the pupil is not supposed to be familiar. Lessons on *land* will include plains, deserts, prairies, mountains, table-lands, volcanoes, continents.

Lessons on *water* will include gulfs, straits, channels, seas, bays, lakes, and oceans. Lessons on *animals* will include such animals as tigers, lions, and others not familiar to the child. Lessons on *plants* should include those which are most useful and interesting, as the date-palm, the orange tree, the coffee-plant, the tea-plant, the sugar-cane, the cotton-plant, the bread-fruit tree, and others. Lessons on *people* should include those presenting some striking characteristics, as the Esquimaux, with their dogs, their sledges, and their huts of snow; the Arabs, with their horses and their tent-life; the Indians, with their wigwams and their love for the chase; the Chinese, with their peculiarities of dress and food; the Hindoos, with their castes and their modes of worship; the Sandwich Islanders, with their aquatic sports.

The Method.—In pursuing this plan the teacher must begin with what the pupil knows, and by short steps lead him to form an idea of the unknown. Thus, he may begin with the idea of a pond or a mill-dam which is already known to the child. Let him now think of another pond so wide that he cannot see from one side to the other, and he will have the conception of a *lake*. Similarly, let him stand on a level piece of ground and then imagine a similar level piece of ground covered with tall grass, and so wide and so long that he cannot see where it ends, and he will form an idea of a *prairie*. In the same way he may gain the conception of a *mountain* from a *hill*, a *volcano* from a *mountain*, a *desert* from a *patch of sand*, or a *bay* from a *curve in the bank of a creek*. The same plan may be followed in giving the child a knowledge of the various peoples of the earth, the varieties of animals, plants, fruits, and so on, all of

which are beyond the reach of its observation. It is true, much of this knowledge will be of a fragmentary character, but it will serve to awaken such an interest in both Geography and History as will make the pupils eager to pursue the study of both sciences.

3. **The Explanatory Stage.**—In this stage, which follows closely upon the Perceptive and the Conceptive, a knowledge of geographical facts and geographical terms is conveyed to the learner partly by explanations and partly by illustrations. The method is, to a great extent, objective.

Lessons.—These include such of the astronomical features of the science as the pupil is able to comprehend. They consist of lessons on the form of the earth, the motions of the earth, the cause of day and night, the cause of the change of seasons, latitude and longitude, the circles (including the tropics, the equator, the polar circles), and the zones or belts bounded by these circles.

The Method.—At this stage of the pupil's progress he should be made acquainted with the globe. All the usual astronomical facts taught in connection with Geography may be taught in connection with this apparatus.

In teaching the form of the earth by means of a globe some of the proofs that the earth is round may also be taught, as the approach of a ship from sea and the shadow of the earth on the moon during an eclipse.

In teaching the *equator*, the *tropics*, and the *polar circles*, the best plan is to call attention to these on the surface of the globe, and at the same time explain why the polar circles and the tropics are located as they are. In connection with these circles the zones also may be taught,

and with them something of the nature of the plants and animals found in each of the zones. Interesting anecdotes or incidents of travel might be related, particularly in connection with the Frigid zones or with the Torrid.

In teaching *latitude* and *longitude* the pupil may be taught to reckon the latitude and the longitude of various places. He should at the same time be required to locate the different places whose latitude and longitude are named to him. These two subjects should always, if possible, be taught in connection with a globe, in order that pupils may form no incorrect conceptions with regard to them.

In illustrating the motions of the earth it will be easy to teach the cause of day and night, and with it sunrise and sunset. The cause of the change of seasons may also be taught readily by holding the globe in the proper position, inclined $23\frac{1}{2}$ degrees, and then moving it around some stationary object representing the sun. In the absence of a globe, a pumpkin or an apple may be used to represent the earth, and a lighted candle or a lamp the sun.

The Globe.—The globe is an important piece of school apparatus, and school officers should see that every school in which Geography is taught is supplied with one. Many teachers, however, find themselves compelled to teach the astronomical facts of Geography without a globe. Patent globes are expensive, and teachers find it beyond their power to secure these. Some manufacturing companies enclose their goods in globes, which when emptied of their contents answer very well as a substitute for a more expensive globe.

Maps and Map-Drawing.—One of the first steps in Primary Geography is that of teaching location and direction. Pupils should first be taught the points of the compass—north, east, south, west—from the school-house. This may be done readily by the old-time method, of having the learner face to the north. He can do this best by locating the place of sunrise in the east and sunset in the west. Practical questions should then be given to him, asking the direction of certain points or localities, until he can tell readily in what direction any known point is from the school-house or from his home.

Some teachers draw a north-and-south line on the school-room floor, and, crossing this at right angles, an east-and-west line. This may be of use to beginners, but it ought to require a very short time for the pupil to learn that the sun rises in the east and sets in the west, and apply this in learning absolute directions.

In learning relative directions, if the pupil be required simply to place the map before him and remember, as before, that the right hand is east and the left hand west, it will take but a short time for him to learn that the top of the map is north and the bottom south. No special device or direction need be given to teach this fact. Few pupils would be so stupid as not to understand it at once. In order to impress the fact on the pupil's mind let him give both the absolute and the relative direction. Thus, when he tells that Maryland is south of Pennsylvania let him also be asked to point to the direction of Maryland. If he states that some city is "a little below east" of his home, let him point a little south of east to indicate the exact direction. In

this way relative and absolute direction will both become readily understood.

Making Maps.—As soon as the pupil has learned to distinguish both absolute and relative direction he should be taught to prepare maps of the school-grounds, the neighborhood, etc., locating each farm-house or residence, the roads or streets, the neighboring streams, etc. This process of map-construction should then continue all through the course as the teacher proceeds from division to division.

The steps in map-drawing are three in number. The first efforts of the learner should be to *copy* from the open book, making the map of the same size as the copy. The next efforts should be to *enlarge* and draw the map either on paper or on the blackboard. Lastly, the pupil should be required to *reproduce* the map from memory.

In drawing maps the teacher must not expect the first efforts from memory to be works of great merit. A simple outline with a few of only the most important features should be required. These are all that is necessary to show that the pupil's general idea is correct.

Pupils should be able to locate on outline maps the most important objects, as ranges of mountains, bays, lakes, the chief cities, and so on, but not every insignificant stream or town printed in the atlas.

Globe-Lessons.—Globes are not designed to teach simply the shape of the earth and the motions of that planet. Various interesting exercises on the globe may be conducted in such a way as to make the study of Geography a pleasure to children. A few lessons are

indicated here; the earnest teacher will be able to originate many others equally valuable.

The teacher places the globe before his pupils, and permits them to step forward one at a time and follow his directions. If one fails to answer correctly, another is called to take his place, and so the exercise proceeds, the teacher telling nothing that the pupils can discover for themselves.

Lesson 1.

1. What shape is the globe?
2. What shape is the earth?
3. Point out the parts of the globe that represent land.
4. Point out the parts that represent water.
5. Put your finger on the most northerly part of the globe; what is that point called?
6. Put your finger on the most southerly part of the globe; what is that point called?
7. Place your finger halfway between the North Pole and the South Pole and turn the globe; what line does the finger seem to follow?
8. Which is the greater, the land-surface or the water-surface?
9. Where is the most land-surface found, north or south of the equator?
10. Where is the most water-surface found?

Lesson 2.

1. In what direction is the North Pole from the equator?
2. In what direction is the South Pole from the equator?

3. Point to North America.

4. Point to South America.

5. In what direction is North America from South America?

6. Point to Europe. In what direction is Europe from North America?

7. Point to Asia. In what direction is Asia from Europe?

8. Point to Africa. In what direction is Africa from Europe?

9. In what direction is Africa from South America?

10. In what direction is Europe from Asia?

In a similar manner globe-lessons may be conducted on the following topics: *Seas, mountain-ranges, oceans, rivers, important cities, the circles, latitude and longitude, the zones, the principal islands,* and other important topics.

Map-Lessons.—All important descriptions should have their location indicated. The teacher should require the pupil to point out on the map every city, State, country, or natural division that he attempts to describe. The method may be varied from time to time, both to preserve interest and to make the pupil's knowledge certain. One pupil may point to localities and name them in order; or he may point to them and have some other pupil name them; or he may point to the localities as called for by the teacher or some member of the class; or the class may name as the teacher points; or, best of all, the teacher may point to some locality, and, calling upon some pupil, have the latter not only name the object, but also state some fact in connection with it. By this plan

the location and the interesting facts connected with any city, State, river, etc. are associated, and in the future each aids in recalling the other.

Locating Current Events.—The teacher should give his pupils frequent exercises in locating current events. Most pupils learn more or less of the history of current events from the daily and the weekly newspapers, and they should be encouraged to locate all events of general interest on the map. This will not only help them to remember the fact, but it will also lead them to associate History and Geography, and thus make each a more interesting study.

Preparation of Map-Lessons.—In the preparation of the first map-lessons the advance lesson should be read in class by the teacher, and the pupil be permitted to answer with open book. If the pupil is not able to find the locality with reasonable effort, the teacher should assist him. There is no discipline afforded in having a pupil search for ten minutes or more in his efforts to discover some unimportant cape or insignificant island. After having gone over the lesson with the pupil, the teacher may select the important parts and have the pupils prepare these thoroughly to be recited from memory at the next recitation.

Definitions.—Pupils should not be permitted to give definitions without showing that they fully understand them. Many a child has gone through the process of defining an *island* repeatedly, as "A body of land entirely surrounded by water," without for a moment having any correct conception of the meaning of either of the words *entirely* or *surrounded*. To such a child the

definition means nothing. It is the clear duty of the teacher to see that the learner has a definite idea of what is meant, and not that he is able only to memorize and repeat the words.

Added Facts.—The best teachers of Geography, particularly in presenting the science to primary pupils, as a rule, are those who add most interesting facts to those communicated by the textbook. The teacher should never rest satisfied with the mere statements of the textbook. These are necessarily brief. Many interesting historical incidents, reminiscences of travel, or facts in natural history may be connected with the bare geographical details of most localities in such a way as to make the science a charming as well as an interesting study for all pupils.

Geographical Outlines.—It is important that pupils be able to classify their knowledge with reference to any State or country. Geographical outlines will be found convenient for this purpose. These will not only lead the pupils to systematize their knowledge as derived from individual textbooks, but they will also encourage the pupils to search for additional facts, and thus broaden their knowledge of the science.

The following form is meant simply to be suggestive; it may be used as it stands or it may be greatly condensed, as the teacher may prefer:

1. Location. . . .
   1. Latitude.
   2. Longitude.
   3. With reference to other bodies of land or water.

2. Size. . . . . .
   1. Area.
   2. Comparative.
   3. Length and breadth.

- 3. Outline.....
  - 1. Indentations. .
    - *a.* Seas,
    - *b.* Gulfs,
    - *c.* Estuaries,
    - *d.* Deltas.
  - 2. Projections....
    - *a.* Capes,
    - *b.* Peninsulas.
  - 3. Connections. . .
    - *a.* Isthmuses,
    - *b.* Straits.
  - 4. Islands.....
    - *a.* Single,
    - *b.* Groups.
- 4. Natural Features.
  - 1. Land. .....
    - *a.* Mountains, { Ranges, Peaks.
    - *b.* Plateaus,
    - *c.* Plains and valleys,
    - *d.* Water-sheds.
  - 2. Water.....
    - *a.* Rivers,
    - *b.* Lakes.
  - 3. Climate. ..... Phenomena, etc.
- 5. Productions.....
  - 1. Natural. .....
    - *a.* Animal,
    - *b.* Vegetable,
    - *c.* Mineral.
  - 2. Artificial. ....
    - *a.* Animal,
    - *b.* Vegetable,
    - *c.* General Manufactures.
- 6. People.....
  - 1. Races.....
    - *a.* Civilized,
    - *b.* Nomadic,
    - *c.* Savage.
  - 2. Appearance,
  - 3. Customs,
  - 4. Pursuits, etc.,
  - 5. Number.
- 7. Enterprises.....
  - 1. Cities and Towns,
  - 2. Commerce,
  - 3. Public Works,
  - 4. Manufacturing,
  - 5. Railroads,
  - 6. General Improvements.
- 8. Institutions.....
  - 1. Government...
    - *a.* Republican,
    - *b.* Monarchical.
  - 2. Education.....
    - *a.* Public,
    - *b.* Private.
  - 3. Religion.
- 9. Miscellaneous.

Suggestions on Teaching Geography.

1. First Lessons.—The first lessons in Geography should be oral, and facts should be presented before definitions and causes.

2. **Descriptions and Locations.**—Descriptions and locations should be associated. Interesting facts in connection with every place studied should, if possible, be given to the child. Fewer locations if possible, and more important facts, should be the aim.

3. **History and Geography.**—These should be made to supplement each other. Every important location should have connected with it interesting and striking historical associations if such exist. Thus by the law of association both will be remembered. Boston recalls the Tea-Party; Independence Hall, Philadelphia, the Declaration of Independence; Florida, the visionary dreams of Ponce de Leon; St. Helena, the banishment of Napoleon.

4. **Important Facts.**—Teach only the most important facts to beginners. Many of the locations of the smaller towns, rivers, etc., together with the lengths of rivers, are quite as profitably forgotten as remembered.

5. **The Textbook.**—Do not continue oral instruction in Geography beyond the point where a pupil can profitably use a textbook. While it is true that much of the interesting part of Primary Geography may be presented orally, the pupil needs the discipline of study quite as much as he needs the geographical facts, and the knowledge acquired by his own efforts will prove doubly valuable.

6. **Memorizing.**—Pupils should not be required to memorize descriptions *verbatim*. If they are able to relate the substance of these descriptions in their own words, it is much better. They should even be encouraged to go beyond the textbook and add facts as they have gleaned them from other textbooks or from newspapers and magazines. Should the pupils in reciting

omit anything of importance, this may be brought out by the judicious questioning of the teacher.

7. **Local Geography.**—Make pupils thoroughly familiar with the geography of their homes, and connect this elementary knowledge with the first lessons of the textbook.

8. **Globe-Lessons.**—Give considerable prominence to globe-lessons until pupils can locate readily and tell direction on the surface of the globe, as well as explain the motions of the earth, and acquire other knowledge to be gleaned only by the use of the globe.

9. **The Method of Teaching.**—The synthetic method of teaching Geography is necessarily limited in its application. The local objects and divisions, properly the material of perception, will soon be exhausted, and it will then be found that it is more profitable to study the world as a whole, and then, avoiding details, proceed to the more important divisions.

10. **The Main Facts.**—Fix upon the main facts to be learned; mark these in the textbook, and then proceed to give your pupils at first only a general knowledge of Geography, without crowding their minds with that which will prove useless and burdensome. Some prominent educational writers urge that at least three-fourths of the ordinary textbook may be discarded as worthless.

11. **State Geography.**—Have pupils study their own State in detail. State geography is important to every one. But very little attention need be given to the details of other States. Many of the facts set forth are important only to the residents of those States. The general facts respecting all the States, however, should be carefully taught.

12. **Reviews.**—Give frequent reviews on the main outlines of the study until these are firmly impressed on the mind of the learner.

13. **Origin and Etymology of Names.**—Associate with names their origin and etymology wherever it is possible to do so. Thus, the signification of Nova Scotia ("New Scotland"), Newfoundland ("new found land," the whole territory from Labrador to the Chesapeake being called *new found land* by the Cabots when they first discovered it), Erie ("wild cat"), Monongahela ("the banks come tumbling down"), and many other names, both suggestive and interesting, may be taught.

14. **Geographical Affixes.**—Show that both geographical prefixes and geographical suffixes, with their meanings, may be made interesting to pupils. Thus, when the child learns that *ton* means a town; *wich* or *wick*, a village; *by*, a town; *kill*, a creek; *sierra*, a saw; *rio*, a river; *belle*, *bel*, or *beau*, beautiful; *strat* or *stras*, a street, —the names in which these affixes are found become to him doubly interesting, and with very little effort he may be led to study names and their meaning for himself.

15. **Location by Latitude and Longitude.**—A valuable exercise is that of having pupils locate places on either the map or the globe, the teacher dictating the latitude and the longitude only. Thus, the teacher may place on the blackboard the latitude and the longitude, as follows, and have the pupils name the localities at the next recitation:

Latitude.	*Longitude.*
59½° N.	31° E.
53° N.	6° W.
23° S.	43° W.
30° N.	90° W.

An equally valuable exercise is that of having the pupils name all the cities or countries on or near a certain parallel or on or near a given meridian.

16. **The Classification of Geographical Facts.**—Let pupils be trained to classify geographical facts as they proceed. Thus, let them be required to tell not only what certain countries produce, but also from what countries certain products may be obtained. Let them name a product and locate all the countries producing it. In this manner they may locate the countries producing rice; also those producing spices, silks, tea, coffee, wine, oranges, coal, coal oil, salt, etc. Let them also tell in what countries certain animals are found, as the deer, the bear, the wolf, the tiger, the elephant, and so on. This will tend to make their knowledge both broad and accurate.

17. **Voyages.**—Let pupils describe imaginary voyages or travels, starting at a certain point, and telling of the important places passed on the route, with a brief description or interesting incident relative to each, and naming the waters or the countries through which they pass.

18. **Comparisons.**—Have pupils compare countries and bodies of water to objects whose outlines they resemble; thus, Italy to a boot, Lake Erie to a whale, the Sea of Japan to a rabbit.

Require them also to make comparisons of size, as Arabia with the United States, England with Pennsylvania, Texas with Rhode Island; or have them select divisions of nearly equal extent, as Indiana and Ireland, Illinois and England.

19. **Tracing-Lessons.**—Pupils may be taught to remember the locality of places by means of tracing-lessons.

Thus, let them start at any point and follow a river or a coast-line, and name every important place as they reach it. The river Mississippi or the eastern coast-line of the United States would prove a valuable line of travel. Lessons of this kind tend to cultivate a habit of close observation. If the pupil could tell something about each important place as he names it, the lesson might be made still more interesting. A full course of these tracing-lessons would give pupils a very full knowledge of the local geography of any country.

20. Newspapers.—Newspapers should be brought into the school-room occasionally, when the places mentioned in the news department, both home and foreign, may with profit be referred to the pupils for location.

21. Compositions.—It will be found a pleasant exercise to have pupils sometimes write a short composition describing the country which they have studied. At such times encourage them to add anything of interest that they may be able to glean from other sources than the textbook.

22. Description.—The monotony of the daily recitation may be varied by reading to the school from magazines, newspapers, or books of travel vivid descriptions of various localities; also, by showing to the class pictures of natural scenery as found in books, illustrated newspapers, and magazines.

23. Geographical Cards.—Where the real objects cannot be observed by children, geographical cards will be found of great value. These illustrate by means of engravings the chief geographical terms, as isthmus, sea, island, etc.

24. Blackboard Drawing.—Outline map-drawing on the blackboard is in general more useful than more elaborate

work with pen or pencil. The teacher who makes a hobby of map-drawing wastes a great deal of time and labor. The objects of map-drawing, training the pupils to reproduce outlines and locate readily, should always be kept in mind.

25. **Map-Drawing by Latitude and Longitude.**—The drawing of outlines and the location of important places and geographical divisions by the parallels and meridians will be found specially useful where the map of any political division, from a State upward, is to be constructed.

26. **Exhibition Maps.**—The best maps should be selected from the work of the pupils and be placed on the wall. This will prove a valuable incentive for pupils to do their best. Some of the best maps drawn on the board may also be permitted to remain for a day or two, unless the board-surface is needed for other purposes.

27. **Sectional Maps.**—These are valuable in teaching pupils the location of the various divisions. It would be well if every pupil were required to draw by exact measurement a county map of his own State, then paste it on card-board and cut it into sections, each section to contain a single county. These sections he should be required to place in their proper positions again. In a short time he will become quite expert in locating every county. The same plan might be pursued with reference to a State map of the United States and the township map of his own county.

28. **Important Maps.**—It would be well if the pupil were required to draw either on the blackboard or on paper a map of the United States, also a map of his own county and State, at least once a year.

29. **Open Maps.**—When outline maps are furnished for the schools the teacher should see that they are kept open, or at least a portion of them. Many a pupil learns quite as much Geography from the open maps before him, where he may see and examine them at all times, as he does from the formal recitation.

30. **Geography-Matches.**—Much interest may be aroused by means of Geography-matches. The teacher will be able to devise various ways of conducting these, and the questions may vary very greatly. As an example an exercise may consist of questions similar to the following, one question being given to each pupil in turn:

Exercise.

1. Name a river in England, and tell into what it flows.
2. Name a river in France, and tell into what it flows.
3. Name a river in Russia, and tell into what it flows.
4. Name a river in Italy, and tell into what it flows.
5. Name a sea in Europe, and locate it.
6. Name a sea in Asia, and locate it.
7. Name a country, give its capital, and locate both its capital and its largest city.
8. Name some important mineral, and tell in what countries it is found.
9. Name some important vegetable production, and tell in what countries it grows.
10. Name some important manufactured article, and tell in what countries it is produced.

31. **From Facts to Causes.**—Pupils should, as far as possible, be taught the causes of the various geographical phenomena and the reasons for the different geographical

facts. It will be interesting to them to know why the earth is round, why it is slightly flattened at the poles, how islands are formed, how rivers are formed, why it is colder at some places than at others in the same latitude, and the reasons for hundreds of kindred facts. Much of the philosophical part of Geography must be taught in connection with Physical Geography, but many causes of interesting geographical phenomena may be made plain to those who are not yet prepared to pursue the study of Physical Geography.

HISTORY.

History is a narrative of events. It is a record of the past, giving the facts concerning both nations and individuals and showing to some extent the causes of the present condition of different nations. History is usually considered under the two heads, *Facts of History* and the *Philosophy of History*. The former embraces and describes the chief events in the order of their occurrence, together with sketches of such individuals as played an important part in the various changes as they occurred; while the Philosophy of History seeks to investigate the causes which have led to the various changes that have taken place in the life of nations, and to infer the general laws that are likely to govern, to some extent, the conduct of nations as well as individuals, and thus mould their future.

I. Difficulties in the Way of Teaching History.

One of the chief difficulties in connection with the teaching of History is that we have no means of proving the truth of historical statements. In natural science we can illustrate by means of apparatus; in many other sciences we can refer to axioms or general definitions; but in History we have nothing to depend

upon except the direct statement of the historian. When we further take into consideration the fact that historians frequently disagree, together with the proneness of men to misrepresent both their own actions and those of their enemies, the proper teaching of History becomes a still more serious matter.

A second difficulty lies in the fact that in some cases the means of securing reliable information as afforded to the historian have been but limited, and some supposed facts of history are therefore merely guesses, of whose truth or falsity we know absolutely nothing.

A third difficulty in the teaching of History lies in the nature of the study itself. There is in most sciences a relation existing between the different parts which enables us in a measure to systematize the study. In History this is not the case. We have no relations here except those of a chronological nature; there is usually very little connection of events except in time, and this gives us but little opportunity to refer historical facts to any laws of association for the purpose of enabling us to remember.

II. Methods of Teaching History.

In the matter of writing History there are two chief methods. The first, known as the *Ethnographic*, is that in which the history of a particular nation is narrated without reference to the history of other nations, except so far as may be necessary to illustrate the facts related concerning the nation under discussion. The second method, known as the *Synchronistic*, relates the history of mankind in eras or epochs, each nation receiving its proportionate share of the narrative as pertaining to

that period. For most students in History the ethnographic method is preferable, as the pupil is enabled to trace the history of a single nation from its origin to the present time without danger of confusion of facts.

In teaching this subject the history of one's own country should be the first considered. The general methods which apply to any one country may, however, be made to apply in studying any other, and therefore the following discussion, which has special reference to teaching the history of the United States, is applicable to the teaching of the history of any other nation or country.

Principles.

The following principles should govern the teaching of History:

1. *The First Steps in Teaching History should be in the Form of Narrative.*—The child's love for stories manifests itself at a very early age. It listens with absorbing interest to the relation of incidents and events of a personal nature as early as it is able to comprehend. The true plan of teaching seems therefore to be indicated by the mental condition of the learner. This taste for narrative should be gratified by teaching at first mainly interesting incidents, even though the facts communicated be of a fragmentary or disconnected character.

2. *Oral Instruction should Precede the Study of a Textbook on History.*—The chief thing to be accomplished at first is that of arousing an interest on the part of the child. Pupils who begin the study of a textbook without preliminary oral instruction are apt to memorize the textbook matter in order that they may recite the details verbatim. The pupil may of course read a book in con-

nection with the oral instruction which he receives, but he should not at first be permitted to recite from it. He should be required to reproduce, in the shape of short compositions, what the teacher has told, rather than what he may have gleaned from the book.

3. *The First Instruction in History should be mainly Biographical.*—The personal history of Columbus, his travels, his efforts to interest the different courts and kings in his project to discover a new world, his trials, his final discovery of land, and his ultimate poverty and neglect, will all be interesting to the child. Thus, also, the life and adventures of Captain John Smith, the biography of William Penn and a narrative of his efforts to establish settlements in America, the story of Washington's life,—all these will prove much more interesting than the records of the various charters and how obtained, or the wars and intrigues of the different nations for the purpose of acquiring territory for the countries of the Old World.

4. *The Facts of History and the Philosophy of History should be Associated.*—As soon as the pupil is prepared to understand the causes which have led to certain events he should be taught not only these, but also the results of such changes as have taken place. A knowledge of the facts of History is important, but a knowledge of the philosophy of History and the relation of results to the future welfare of the country, is of vastly greater importance.

5. *The First Teaching of History should be Inductive.*—The pupil will naturally be more easily interested in the history of his own country than in the history of foreign countries or in the history of the world at large. A

knowledge of the history of one's own country is also more important to the student than that of other countries; and for this reason also the first instruction in History should begin at home.

The next countries to be taught are those with which the home history is to some extent connected, and from these the instruction should pass to the world at large. At first only the most important and most interesting facts need be taught. Much should be left untaught for the pupil to acquire for himself. In no branch of study can the student do so much for himself as in the subject of History.

6. *History should be made Interesting.*—The learner who has once become interested in the subject of History will need neither urging nor teaching; he will pursue the study of History for the love of the narrative itself. The chief work of the teacher, therefore, lies in the direction of creating such an interest as will lead the pupil to pursue the study from a love for it when no longer under the guidance of an instructor. What we all remember best of History is what most interested us when we studied the subject; and for this reason also the teacher should make special efforts to render the subject interesting.

Essentials in Teaching History.

Primary History.—The method of teaching primary History differs from that of teaching the more advanced part of the subject mainly in the fact that primary instruction should consist as nearly as possible of stories and biographical sketches. These need have little connection so far as chronology is concerned. The less said

about dates, the less the child's mind will be encumbered with useless matter.

The proper presentation of primary History requires the teacher to be expert in reciting narratives. He must also have a thorough knowledge of the incidents he attempts to relate, and be able to relate them in such a way as to attract and interest his pupils. The teacher's knowledge of a single textbook will not prove sufficient. He should be able to add much interesting matter, and be able to tell much that is not to be found in the ordinary textbook.

Reading History.—A love for History should be created by placing in the hands of pupils such books as they will be able not only to comprehend, but also enjoy, because of the interest which the narratives themselves arouse. Among the works to be highly commended are those of "Peter Parley" and Charlotte M. Yonge, and, when the pupils are a little older, Dickens's *Child's History of England*, the Rollo Books, Abbott's Histories, and Higginson's *Youth's History of the United States*. All these are written in such a captivating style, and present facts in such an interesting way, as to make it a pleasure rather than a task to read them. When once the teacher has awakened a love for historical reading the study of History will not prove an uninviting one to the pupil, nor will the teacher find the task of teaching History one to be dreaded.

Biography.—History has for its basis the biography of the chief actors in a nation. The student who reads the lives of Washington, Franklin, and others of the

Revolutionary days, reads substantially the early history of our republic. It is important, therefore, that the student of History be encouraged to read biography also. Let him not be satisfied with the bare historical fact as stated in the textbook, but lead him to connect this with the life and interesting history of those who made History what it is by the part which they played in the historical changes that have been wrought.

Leading Events.—The student of History should be led to see that certain leading events in the history of every nation have been most fruitful of historical changes. These he should be taught to regard as the essential points to be remembered. Much of History, it may be remarked, is only to be read. The pupil would find it unprofitable to attempt to remember everything as it occurred in a nation's growth. History, however, should not be a mere skeleton. Chronology and History are not the same, however important the relation between the two.

Historic Centres.—Much the best plan of presenting History to the advanced student is that of selecting some historical event as a centre about which others may be grouped. Thus, in American history, the chief centres are Discoveries, Early Settlements, the French and Indian War, the Revolutionary War, the War of 1812, the Mexican War, the Civil War, Slavery. About these different centres may be grouped nearly every historical fact of importance in the record of our country.

The History of Peace.—Probably in no respect is so

great a mistake made in the teaching of History as in giving undue prominence to the history of the various wars with which our country has been afflicted. Authors of histories seem to think that the student of History is interested only in war and its results, and not in the greater victories of peace. Much attention should be given to such important topics as the introduction of railways, the invention of telegraphy, the introduction of the electric light, and various other matters that mark intellectual progress and prosperity, and show the substantial claims which an advanced civilization presents.

Causes and Results.—History should not be regarded as a mere recital of events. Pupils should be taught that each event has had a producing cause, and this, with the result, should also be carefully taught. Thus, in teaching the Revolutionary War, the plan should be first to show both the direct and the indirect causes which led to the revolt of the colonies against England; following this should be mentioned the chief events and incidents of the war itself; and then the results of the Revolution, including the independence of the States, the Confederacy, the formation of the Constitution, the inauguration of the present government, the enlargement of territory.

In a similar manner, each of the other important events in our history might be taught, and in connection with the event the producing cause or causes, as well as the result and its influence on the subsequent history of the nation.

Historical Characters.—It will frequently prove profitable to have pupils study some historical characters with-

out reference to the concurrent actions of others. Thus, it would be interesting to trace the career of Washington from the time he first appears in the history of our nation to the time of his death. The biography of Franklin, William Penn, Captain John Smith, Columbus, Henry Hudson, and others would prove equally profitable.

Methods of Recitation.

The method of recitation in History should be mainly topical. The advantage of the topical method in History is that pupils learn to express themselves in a more connected manner than by the catechetical method of recitation. The latter method should, however, be employed in bringing out facts of interest that may have been overlooked by the pupil.

Care must be taken when the topical method of recitation is pursued that pupils recite in their own words and not in the language of the textbook. One of the chief faults in the past teaching of History has been that of requiring pupils to recite as nearly as possible in the words of the textbook. The result has been that pupils memorized the language of the book verbatim, and while able to repeat the words knew nothing of History.

It will be found a valuable variation of the topical method to have part of the class recite orally while others write their recitation of the same topics, some on paper and others on the blackboard. The topical method may be further varied by having a pupil who recited orally proceed to write out in correct language all that he stated previously. By this method the pupil gains a twofold advantage of the recitation, in making the his-

torical fact a part of his own knowledge and in gaining at the same time valuable training in language.

Questions.—When a pupil has finished reciting a topic the teacher should proceed to question him in order to develop such facts as may not have been stated, as well as detect whether the recitation has been a mere repetition of words or an intelligent statement of facts.

Outlines of Topics.—Before the recitation on History begins let a number of pupils proceed to place on the blackboard an outline of the subjects to be discussed during the recitation. This will require each pupil to have a comprehensive view of the lesson as a whole. Writing this outline will tend also to impress on the mind of the learner even the details of the lesson. While some pupils are writing this outline others may proceed to discuss individual topics. Both the written and the oral discussion should be open to the criticism of the other members of the class, in order that all may be trained to strict accuracy.

Geography and History.—These two should, to some extent, be taught together. All important historical events should be located on the map. Pupils should be required to show the routes of armies, the points of attack, etc. They should also be required to trace the course of navigators in making the first discoveries in this country. They may also be required to produce maps and locate the principal historical events; all this will tend to make their knowledge of both Geography and History more definite and more valuable.

Historical Discussion.—The student of History should be encouraged to form judgments and express his opinions on any historical changes that may have taken place.

Thus, the causes which may have led to any war, or the result of a war, may form the basis of discussion, in which the pupil should be permitted to express his opinion unbiased by any statement of the historian. This will encourage pupils to read History intelligently, and not follow blindly the statements of possibly partisan writers.

Historical Lectures.—These are designed mainly to benefit those who have completed the study of the textbook, by adding new matter which is beyond the reach of the learner. They may be made specially interesting by making them partake largely of a biographical character. They should also, to a great extent, be interspersed with personal incidents and anecdotes, to make them both interesting and profitable.

Preparation for the Recitation.

The Teacher's Preparation.—The teacher should know much more History than is to be found in the textbook from which the pupil is expected to recite. He should also know what is presented in the textbook used, and the manner in which it is presented, in order to appreciate the efforts of the pupil reciting. He should, however, have an additional fund of anecdote and incident from which to draw, and with which to embellish and make interesting the topics to be taught. He should also be prepared to express himself in choice language and in such a manner as to hold the attention of the class closely to the subject of the lesson.

The Pupils' Preparation.—Pupils should be required to prepare their lessons by topics, not by pages. Uniformity of textbooks is not absolutely essential in this branch.

Indeed, many good teachers prefer that the pupils should not all prepare their lesson from the same author, permitting the children to gather their knowledge from any reliable source.

The pupils in preparing the lesson should be encouraged to get a view of the lesson as a whole, and then add the chief details. They should be encouraged to prepare an outline of the chief events without reference to the minute details of the subject; these may, if necessary, be added afterward. Each event should be studied also with reference to its relation to preceding events, as well as with relation to its causes and results.

III. Suggestions on Teaching History.

1. Dates.—Do not require your pupils to memorize all the dates. Select only those dates to be memorized which mark the leading events. The sequence of events is more important than dates. It is the senseless requirement of some teachers that all dates be memorized, and it is this that makes History a study to be despised by the pupil.

2. The Advance Lesson.—Read the advance lesson aloud to the class, and have your pupils mark such parts as you desire to have them remember. Much of History is simply to be read, not memorized.

3. Prominent Events.—Make a few events prominent, and around these group minor events that have a relation to these more important ones.

4. Chronological Tables.—Give but little attention to chronological tables except for reference. Teaching chronology is not teaching History. The year or the day on which a battle was fought or a city destroyed is

of but little moment compared with the cause and the results.

5. **Causes and Results.**—Have pupils fix in their minds the causes and the results of the most prominent events, as the Revolutionary War or the Mexican War. Ask questions which will lead them to search for causes. Why did Penn try to establish colonies in this country? Why do we celebrate the Fourth of July? Why did the Dutch seek homes on the Hudson? Why did the Boston people throw the tea overboard into Boston harbor? Questions of this character will cause the pupil to think, and he will see some reason why we should study History.

6. **Biographical Sketches.**—Have pupils write short biographical sketches of the most prominent or interesting characters in History. This will lead them to an acquaintance with History by a pleasant path, and they will soon become interested.

7. **Map-Drawing.**—Let pupils in History draw maps and locate important events, so as to show that they comprehend fully what they recite. These maps may be drawn on an enlarged scale, and the routes of armies be traced and the scenes of other interesting events be located.

8. **Make History Interesting.**—Supplement the text-book statement with interesting anecdotes, incidents, stories, and sketches of noted men. The sufferings of the soldiers at Valley Forge and their bloody footprints in the snow have stirred the heart of many an American boy more than all the victories ever gained by the Continental army. An anecdote often serves to make an historical fact stick when it would otherwise be for-

gotten. The fact that Santa Anna retreated so rapidly from Cerro Gordo as to leave his private papers and his wooden leg behind will have a more important influence in causing the learner to remember the American victory over the Mexicans in that battle than all the possible records of "killed, wounded, and missing" could do.

9. **The Civil War.**—In teaching the history of the American Civil War do not lead pupils to study events according to the years in which they occurred. Much the easier plan is to trace the progress of events by studying the plans of the various campaigns, which were designed to secure the following results:

1. *The Possession of the Border States;*
2. *The Capture of the Confederate Capital;*
3. *The Blockade and Occupation of the Confederate Ports;*
4. *The Opening of the Mississippi;*
5. *The Division of the Confederacy.*

Each of the foregoing should be studied connectedly and in detail, in order that the pupil may get a comprehensive view of the entire subject, and so arrange the history in his mind as to remember it readily.

10. **State History.**—Have pupils give much attention to the history of their own State. They ought to become acquainted with all the important events that have become a part of the history of the State in which they live.

11. **Historical Changes.**—Let children who have studied History for some time draw parallels between the past and the present, showing the progress made in art, commerce, education, facilities for travel, communication

by post and by telegraph, and the advancement made in social customs.

12. New Matter.—Whenever possible add new and interesting historical matter to that given by the text-book. This may either consist of more minute details than are given in the book, or it may consist of contemporaneous events.

13. Review.—Review lessons continually. Do not wait for a weekly or a monthly review, but whenever you have a few spare moments call upon some pupils to explain topics previously taught. This will impress permanently on the mind the most important facts learned.

14. Examinations.—In examining classes in History avoid dates as much as possible. Assign topics, and let pupils tell or write all they know on these. Intermingle in these topics persons, places, and events; as *Fort Sumter, Alexander Hamilton, Yorktown, the Declaration of Independence, Ethan Allen, The Missouri Compromise.*

15. Civil Government.—Whenever possible teach in connection with History some of the important provisions of the Constitution of the United States. Pupils may be led to take an interest in the duties performed by the various officers of our government, and in the powers which these officers possess. They may also be interested in the mode of making and repealing laws, collecting customs, etc. The study of History in connection with the study of Civil Government should aim to prepare pupils for citizenship.

THE ARTS.

THE arts to which attention should be given in a general course of instruction are Penmanship, Drawing, and Vocal Music.

CHAPTER I.

PENMANSHIP.

NOTHING need be said here as to the usefulness of this art. Indeed, however primitive the condition of a school, the necessity of learning to write, like that of learning to read, is always conceded. The excellence of instruction usually presented on the covers of the various copybooks precludes the necessity of doing more here than give a few suggestions on the methods of teaching penmanship.

The Objects.—Two chief objects must be kept in view in teaching penmanship: first, *the training of the eye to perceive and judge of correct and beautiful form;* and, second, *the training of the hand to execute and produce form correctly.* The child learns to distinguish between correct and incorrect forms much more readily than it learns to execute form. Unless there is special talent it learns to produce form correctly only after long-continued practice; and it seems specially necessary, there-

fore, that the exercises presented be so graded as to make the practice of the greatest possible value.

The Ends to be Secured in Teaching Penmanship.

1. Legibility.—The desirable ends to be secured in the teaching of penmansphip are *legibility*, *rapidity*, and *beauty*. Of these the first and the second are by far the most important for the ordinary student. A plain, legible, regular handwriting is vastly more pleasant to read, and vastly more creditable to both teacher and pupil, than a semi-artistic, grotesque, or angular style that displays some weakness of intellect.

2. Rapidity.—Next in importance to legibility of handwriting is rapidity. This is gained only by constant practice. Written spelling-exercises and written exercises in other branches of study contribute much toward making pupils rapid writers. Business-men particularly find it important to write rapidly. Rapid writing-exercises ought to be a part of the school-work, but legibility should in no case be subordinated to rapidity.

3. Beauty.—Beauty of writing is important in cultivating the taste, but in no case should it be ranked in importance with either legibility or rapidity. Nor should it be supposed that beauty of penmanship consists in sweeping curves, heavy shades, or other fantastic or fanciful work. Flourishes are one thing, while correct and beautiful form is quite another.

Suggestions on Penmanship.

1. Classification.—Much time may be saved in teaching penmanship by having the pupils classified. The school may consist of several sections, all of which may write

at the same time. An explanation to a pupil in any section should be made to all in that section at the same time. This may be done by the aid of the blackboard or the writing-chart.

2. **Writing-Charts.**—If a regular series of copybooks is in use, the charts by the same author should be placed before the pupils. These will be found very convenient in enabling the teacher to point out the proper formation of letters, etc., that the proper corrections may be made.

3. **Printed Copies.**—The printed copybooks published by many American book-houses ought to find their way into every school-room. They are but little more expensive than so much blank paper, and they serve a much better purpose, and save for the teacher much time which may be applied to better use than "setting copies."

4. **Copy-Slips.**—Should no regular series of copybooks be adopted, the teacher should prepare a series of graded copy-slips. The old-style head-lines do not answer the purpose, nor ought the teacher to be expected to set copies for thirty or forty pupils every day preparatory to their exercise in penmanship. He will be able to do much better work by writing on good foolscap paper the same exercise for all the pupils in a section, and then cutting these slips off, so as to furnish one to every member of the section. By this plan the teacher will also be able to grade his lessons from day to day.

5. **A Writing-Time.**—The teacher should have a special time set apart when all pupils may write, and their copybooks should be kept out of sight at all other times. The best time for the writing-exercise is before recess or before the close of school, or at any other time when the

children's nerves are steady; the worst time is immediately after the opening of school or after recess, when the pulse is bounding and the nerves are quivering with the excitement of the play which the children have just left.

6. **Proper Position.**—The teacher must be careful to see that pupils assume a proper position while writing. The right side should be nearest the desk, the arm should rest on the muscular portion between the elbow and the wrist, and only the tips of the little finger and its nearest neighbor should be permitted to touch the paper. The desk should not be so high as to make the arm tired in writing or cause the right shoulder to project above the level of the left.

7. **Holding the Pen.**—The chief thing to be insisted upon here is that the pen shall be held loosely. The chief difference between writing with ease and writing in such a way as to make one tire readily consists in the manner of holding the pen. A writer who holds his pen with a firm grasp will find his muscles growing tired in a very short time, while another who holds the pen lightly is enabled to write for hours without becoming wearied.

8. **Short Pencils.**—The teacher should see that his pupils use long pencils. The frequent use of a short pencil causes the pupil to contract a habit of holding it in a cramped position, which, when he comes to write with a pen, will greatly interfere with either graceful or rapid writing. Bad habits in holding a pencil will almost certainly result in holding the pen improperly.

9. **Movements.**—Have pupils from the beginning write with a free and ready movement, such as will permit

them to use the muscles without tiring them. Whether the movement be the finger movement, the forearm movement, or the whole-arm movement, let the play of the muscles be entirely unconstrained.

10. **Slate-Writing.**—Slate-writing should precede writing on paper. This will give the same muscular movement as writing with a pen, provided the pupil be required to hold the pencil properly, which he can do only when the pencil is of proper size.

11. **Tracing.**—When the pupil first attempts to use the pen he should be required for some time to trace the letters with a dry pen, much as the professional violinist is first required to hold the bow properly and then practice for a time without a rosined bow and without producing any sound. Tracing the letters with a dry pen will give the muscular movement as well as cultivate the idea of form.

12. **Pencil-Writing.**—Writing through the first books of a series with lead-pencil instead of pen and ink will be less likely to deface the copybooks, while the practice is almost as valuable as is afforded by writing with a pen.

13. **Tracing Forms.**—A valuable exercise is that of tracing forms of letters. This may be done on a piece of practice-paper first with a dry pen and then with ink. The same letter, as *a*, or *o*, or *s*, should be traced over hundreds of times until the muscles acquire the proper movement to make the letter properly.

14. **Blackboard-Writing.**—Forms may be traced also on the blackboard with chalk. This will give a free-arm movement. Pupils may also be permitted at times to write on the blackboard. See, however, that the

crayon is held properly and that the work is neatly and correctly done.

15. **But One Way at a Time.**—Do not confuse beginners by teaching them several ways of making a letter, especially capitals. Let them practice carefully on a single way of making a letter until they can make it readily and correctly. If they need other forms these may be taught later.

16. **Individuality.**—Pupils should not be encouraged to imitate the copy so closely as to destroy their own individuality. One's handwriting should be characteristic. When pupils have once learned to write legibly, let their chief aim be to write rapidly, even if the letters are not wholly like those of the copybook.

17. **Specimens.**—Let each pupil be required to give a specimen of his handwriting when he enters school. At the middle of the term let him give a second specimen, and at the close of the term a third, in order that his improvement may be determined by a comparison. All this will be an incentive to improvement.

18. **Principles.**—The principles embraced in the letters should be carefully taught, but not at first. Writing is learned mostly by imitation and practice. Let pupils at first write and rewrite single letters, then short words, and finally sentences, leaving the analyses and the principles to be among the last instruction imparted.

19. **Criticism.**—The teacher should move around among his pupils while they are writing, in order that he may examine their work and make necessary criticisms. Often he may correct the mistake of nearly a whole class by writing on the board a letter incorrectly as he finds it in the work of a number of pupils.

20. **Dictation.**—A valuable exercise in penmanship is that of having pupils write from dictation. The exercise may be made doubly valuable by making this dictation consist of maxims, rules of health, models of business-letters, receipts, checks, and other commercial forms. When once the pupils have learned to write a good hand, the teacher may substitute these dictation-exercises to a great extent for the regular writing-lesson.

21. **Graded Work.**—The first combinations of letters should consist of words in which the letters are each a space in height, as *man, men;* from these the steps should be gradual to words containing letters more than a space in height, as *tan, hen, get.* These may be followed by words containing capitals easily made, as *Aim, Can, Ink.* It must be borne in mind that some of the capitals are but little more difficult to make than are some of the small letters.

22. **Self-Help.**—Show pupils in the beginning of the term that their improvement in penmanship will depend more on what they do for themselves than on what is done for them. They can learn to write only by exercising great care and by practicing patiently until they are able to make the forms correctly and rapidly.

23. **The Custody of the Books.**—Many reasons might be given why the copybooks should be kept at the teacher's desk when the writing-exercise is not in progress. This will prevent much confusion and keep the pupils from writing at improper times. A system of signals, the simpler the better, may be used for distributing and collecting the books.

CHAPTER II.

Drawing.

There is no good reason why Drawing should not form a part of every school-course. Ability to draw is an indispensable element of all true education. It is argued by excellent authority that, "commercially speaking, the power to draw well is worth more in the market to-day than anything else taught in the public schools; and an education in industrial art is of more importance to the development of this country, and the increase of her wealth and reputation, than any other subject of common-school education."

The *chief ends* to be reached in teaching drawing are the culture of the eye in judging of form and the training of the hand in producing form correctly. Both of these processes will teach the child to appreciate art and create in him a desire to possess its products. The tendency of drawing as a study is to minister to the child's love for the beautiful in form, and it thus aids directly in æsthetic culture.

Suggestions on Teaching Drawing.

The authors of drawing-books differ so much in the details as to the manner of presenting the subject that we shall limit the discussion here to a few general sug-

gestions, referring the reader for more specific methods to any one of the various systems of drawing.

1. **Non-Systematic Drawing.**—Pupils early display a taste for drawing pictures of objects. Two benefits will arise from permitting them to enjoy themselves in this way: they will not only be kept busy, but they will also become interested in the subject of drawing itself as their pictures become more and more correct.

Even after pupils have begun the study of drawing in a systematic way they should be permitted to amuse themselves by drawing pictures of familiar objects, or even produce work strictly imaginary in character. This supplementary work is valuable in cultivating taste as well as in giving training to the hand.

2. **Ruled Slates.**—It would be well if every child could at first work on a slate ruled in squares. The lines would serve at first as a guide, and later the places of intersection might be used in locating points in drawing the pictures of objects.

3. **Drawing and Writing.**—Where but little spare time exists, as in the case of ungraded schools, drawing and writing-exercises might alternate, or the pupils might write three times a week and have drawing-lessons twice a week. In this way both these subjects might be taught, and each be made to help the other.

4. **Drawing Familiar Objects.**—Let the children in school, particularly the younger children, have all the exercise they desire in drawing the pictures of familiar objects. Let them select their own topics and have full play, so long as their work does not interfere with the other exercises of the school.

5. **Blackboard Work.**—As a general thing, pupils pre-

fer to draw on the blackboard with crayon, both because they can draw larger pictures and because other pupils see their work. The judicious teacher can frequently do much in the matter of securing good discipline by giving the little folks an opportunity to enjoy blackboard drawing.

6. **Straight Lines.**—Before pupils begin the work of drawing straight lines, let them take straight sticks and show what forms can be made with *two* sticks, as V, T, X, L, etc.; then let them reproduce some or all of these forms on the blackboard and on paper. In a similar way, let them show what forms they can produce with *three* straight sticks, then with *four*, and so on, always reproducing these forms with lines.

7. **Original Designs.**—Many of the foregoing designs will represent forms with which the children have been previously familiar. Encourage pupils also to produce original designs—first, those consisting of straight lines, then of curved lines, then partly of each.

8. **Copies.**—Let pupils at first have considerable practice in drawing from copies before they attempt to draw from Nature. Call their attention to any defects in proportion, shading, etc., as compared with the copy. Encourage them also to criticise the defects in printed pictures as a means of making them careful in their work.

9. **Graded Work.**—In drawing pictures of objects, let the first lessons be in reproducing on paper the simpler forms of domestic utensils, particularly those whose outlines are straight rather than curved. These lessons should then be increased in difficulty very gradually, and the pupils should in general be re-

stricted to the objects or scenes with which they are most familiar.

10. Observation.—In order to draw correctly one must observe critically. The most correct artist is the one who most closely copies the object or the scene whose picture he produces. It is specially important, therefore, that the pupil be trained to look closely and critically at every part of the object or the picture he attempts to copy. This will also afford valuable culture for the perceptive faculty.

11. The Teacher.—When a series of drawing-books is in use the teacher should thoroughly familiarize himself with the system, in order that he may teach intelligently. Where no system is in use, he will find sets of drawing-cards valuable. He will also find it valuable to place on the board occasionally an enlarged sketch of some object on the cards, and then have the pupils draw it reduced in size on paper at their desks.

12. Importance.—Show pupils the importance of drawing, not only in connection with their studies, such as Geography, Natural Philosophy, etc., but also in connection with almost every calling in life.

CHAPTER III.

Vocal Music.

The acknowledged influence and power of music at all times, and particularly its influence over the impulsive hearts of children, precludes the necessity of arguing here the importance of teaching either rote-singing or the science of music in every school, whatever its grade and character. The excellence of the instruction given in most elementary books on vocal music obviates the necessity of doing more than adding a few suggestions here.

Suggestions on Vocal Music.

1. Rote-Singing.—If nothing more can be done, train all your pupils to sing a number of hymns and appropriate songs. The monotony of the school-exercises and the noise of uneasiness may both frequently be corrected by means of a cheerful song. If the teacher cannot sing, he should form a singing-club in his school and appoint some pupil as leader, who may be called upon by the teacher at any time to lead the singing.

2. Vocal Training.—Nothing artistic can be done in the way of voice-culture, but the voices of nearly all pupils may be greatly improved by care. The greatest fault in children's singing is that they sing with too much force. Efforts should be made to correct this habit.

Try to secure pure tones from pupils in their singing, requiring them to avoid all nasal tones and singing with the teeth too close together. Successful work here will have its influence also in making pupils pleasant readers.

3. **The Science of Music.**—Attempts to teach the science of music to young pupils are not usually successful, unless a great deal of time is devoted to the subject. It is not, therefore, advisable to attempt more than rote-singing until the pupils have reached that stage of progress when they learn the science of music readily.

4. **Position in Singing.**—When children sing, see that they sit or stand in such a way as to give their lungs entire freedom to expand, and see that the atmosphere in the room is pure.

(For detailed instruction in the teaching of music the reader is referred to the many excellent treatises and chorus-books prepared specially for the music-class and the singing-school.)

PART III.

METHODS OF CULTURE.

CULTURE consists in training and development. The chief objects of mental culture are to strengthen, chasten, and arouse to the highest degree of activity man's various mental powers. Want of space here precludes a full discussion of the various kinds of culture: such a discussion would require a volume. The author limits himself, therefore, to a few of the most important suggestions on the culture of the different intellectual faculties, as being that part of the subject which is the most useful and practical for the teacher and the most interesting to the general reader.

The chief intellectual faculties to which it is the office of the teacher to give development and training are *Perception*, *Memory*, *Imagination*, and the *Understanding*, and, as accompanying these, the general attribute of mind, *Attention*.

How to Secure and Hold Attention.

In the author's work on *School Management* the following are given as the chief *requisites for securing attention*, the arguments being here omitted:

1. *The teacher must be interesting.*

2. *The teacher should be animated in manner.*

3. *The teacher should present that which is new.*

4. *Stories and anecdotes should be used in teaching.*

5. *The teacher should adapt his teaching to the capacity of his pupils.*

6. *The teacher should attract attention by good elocution.*

7. *The teacher should not talk too much.*

8. *The teacher should hold attention by good class management.*

9. *Inattentive pupils should be called upon frequently to recite.*

10. *The teacher should hold attention by variety in exercises.*

11. *The teacher should be vigilant and keep his pupils vigilant.*

12. *The teacher should show his pupils that attention is the condition of success.*

The following *suggestions* will aid teachers in securing and *holding the attention* of pupils:

1. Have your pupils observe closely.

2. Arouse their curiosity.

3. Show that you are interested in their work.

4. Be cheerful.

5. Vary your methods of recitation.

6. Use the textbook as little as possible.

7. Let your position before the class be such that you can look every pupil in the eye.

8. Read a story or a description, and then have it reproduced by the pupils.

9. Show your pupils that you expect them to be ready

at any time to reproduce whatever you may tell in recitation.

10. Cultivate attention by giving proper praise and credit when pupils are attentive.

Culture of Perception.

Perception is that power of the mind by which we gain knowledge through the senses. The knowledge furnished through perception forms the basis of all other knowledge, either acquired or originated in the mind. The chief avenues through which knowledge reaches the human mind are the five senses, *touch*, *taste*, *smell*, *sight*, and *hearing*, sometimes called "the five gateways of knowledge." The knowledge afforded by means of these senses is not only fundamental; it is also the first knowledge that the child possesses. Perception is therefore the first faculty of the mind developed.

Suggestions on the Culture of Perception.—1. *Physical Health is Essential to the Proper Culture of Perception.*—Sensation precedes perception, but in order that our sensations may be distinct the organs of sense, together with the nerves which convey the intelligence to the brain, must be in a healthy condition; and this can be the case only when the general physical health is good.

2. *Children should be Trained to Observe Closely and Accurately.*—Pestalozzi claimed that in recognizing *observation* as the absolute basis of all knowledge he established the first and most important principle of instruction.

3. *Strict Attention is Necessary to Give Culture to the Observing Powers.*—Without attention on the part of

the learner all efforts to communicate knowledge to him are useless. Ears, eyes, and other organs of sense are in a measure worthless to the inattentive.

4. *Object-Lessons are Important in Giving Culture to Perception.*—The attention of children is more readily secured by having an object present to their senses than by a mere description. The sense of sight is also more active than any of the other senses, and a pupil will with a single inspection during an object-lesson often learn more than a description given by the teacher would convey to him in a series of lessons.

5. *Perception may be Cultivated by having Pupils Study Objects for the Purpose of Describing them.*—It will readily be understood that in order to describe intelligently the pupil must observe both closely and accurately, and his perceptive powers will thus be improved.

6. *Sketching the Outlines of Objects is Valuable in Giving Culture to Perception.*—In order to sketch or draw correctly close observation is necessary, and this in turn gives culture to the faculty of perception.

7. *Variety in School-Work is Conducive to Culture of Perception.*—Children whose minds are directed to one subject for too great a length of time become inattentive, and therefore lose interest to such an extent as to make their observation comparatively worthless.

8. *Short School-days are Best for the Culture of Perception.*—Not only should the transition from one subject to another in school-work be frequent, but the number of school-hours also should be reduced in primary schools. Short school-days—four hours at most, and frequent recesses—are best for little children. Having no recess may be convenient for the teacher, but it is detrimental to the

child's welfare, and therefore pernicious. The outdoor school is quite as important to the child as the more formal one indoors.

9. *Kindergarten Training is Excellent in Giving Culture to the Faculty of Perception.*—It was one of Froebel's characteristics that he cared more for "the *habit* of observing than for the *matter* of observation."

10. *Encouraging Curiosity gives Culture to Perception.*—The curiosity of children should not only be aroused, but they should also be taught how that curiosity may be gratified. A habit of inquiry as to the nature and uses of objects with which the child meets will greatly aid in giving valuable culture to the power of perception.

Culture of Memory.

Memory is that power of the mind by which we retain and recall knowledge. Some writers claim that the word "memory," as here defined, includes two faculties—memory and recollection. For our present purpose it is sufficient to consider the two as included in the term "memory." In the order of mental development memory follows perception. Perception enables us to gain knowledge through the senses; memory enables us to retain that knowledge and recall it at will.

Suggestions on the Culture of Memory.—1. *Close Attention is Necessary to the Culture of Memory.*—Attention is the first requisite to an accurate memory. The heedless student gets only a partial knowledge, and even this is soon lost.

2. *Memory is Strengthened by Use.*—All mental powers are strengthened by exercise, but this is specially true of

memory. The memory unemployed becomes weakened and unreliable. Every one in his own calling finds that his memory is most reliable with reference to that which gives this faculty the most exercise.

3. *The Memory should be Trusted.*—The student who trusts to pen or pencil for what he ought to remember will soon find his memory comparatively worthless. They who desire a reliable memory must trust it and train it to ready obedience in recalling knowledge.

4. *Interesting Knowledge Aids Memory-Culture*—The knowledge which we recall most readily is that which makes the deepest impression on us, because of the interest which it arouses in the mind.

5. *Memory-Culture is Aided by connecting Knowledge according to Laws of Association.*—A thought is often recalled the more readily because of its association with some other thought which has preceded it in the mind. Thoughts suggest one another by the laws of association.

6. *Frequent Repetition Aids in Memory-Culture.*—The more frequently a statement is repeated the more firmly is it impressed on the mind. It is this fact that makes reviews valuable, and the more frequent these reviews on points difficult to remember the more valuable will they be.

7. *The Memory is Strengthened by the Methodical Arrangement of Knowledge in the Mind.*—Facts may be arranged according to the subjects to which they relate, or according to any methodical principle or association. Disconnected and isolated facts are always the most difficult to remember.

8. *The Memory is Cultured by Memorizing Choice Prose or Poetical Extracts.*—This practice will also give valuable

culture in language. The exercise may be extended to include dialogues, descriptions, and even definitions, provided the pupils comprehend what they commit.

9. *Original Thought Aids Memory-Culture.*—Pupils should be permitted to do their own thinking. Whenever the teacher offers assistance to a pupil who can help himself he violates the laws of mental culture and does the pupil a great injury.

10. *Clear Apprehension Aids Memory-Culture.*—When the learner grasps a thought his apprehension of it should be clear and distinct; otherwise, when he comes to recall his knowledge there will be no response.

11. *Local Association Aids Memory-Culture.*—We are often enabled to recall a statement because of its location on a particular part of the printed page. This power to remember by location is sometimes known as eye-memory. It is of special advantage in such subjects as spelling, where it is desirable to remember form.

Culture of Imagination.

Imagination is the power of mind by which we form ideal thoughts and conceptions. It seizes upon the knowledge furnished by perception, and creates pictures —not real, as recalled by memory, but ideal. It follows memory in the order of mental development, and it may receive culture at a very early period of the child's life. This culture may be necessary to make a sluggish imagination more active or to chasten an imagination already too vivid.

Suggestions on the Culture of the Imagination.—1. *The Imagination may be Cultured by Studying Nature.*—Hills,

rocks, rivers, mountains, and other beautiful and picturesque scenery—the ocean, the firmament studded with stars at night, and all else that is grand in the works of Nature—may be made to aid in giving culture to this faculty.

2. *The Imagination may be Cultured by Studying Works of Art.*—Beautiful engravings, beautiful paintings, beautiful statuary, and pleasing music, may all be made to give culture to the imagination.

3. *The Imagination may be Cultured by the Study of Imaginative Literature.*—Poetry, fiction, and all other literature in which the writer embodies his own ideals in elegant and beautiful language, may be made to serve an excellent purpose in giving culture to the imagination.

4. *The Imagination may be Cultured by Creating Images of our Own.*—These images may be either literary or artistic. The student may be led to draw ideal pictures, or he may be permitted to describe imaginary scenes, relate imaginary incidents, or even write fictitious stories. The exercise will be of practical value in giving culture to the imagination, while it also affords culture in language.

5. *The Imagination Needs Chastening as well as Strengthening.*—Images must be appropriate. The imagination must be used in subordination to the dictates of a good taste and sound judgment. A vivid imagination unaccompanied by a discriminating taste is a dangerous power. The grotesque and fantastic products of the savage's imagination differ from the pure and pleasing images of the cultured scholar's mind chiefly as the taste of the one differs in culture from that of the other.

Culture of the Understanding.

The understanding is that power of the intellect by which we derive, through comparison, new truths and ideas. The term as here used is synonymous with the expression "reasoning powers." The work of the understanding consists in producing new truths and ideas from the materials furnished by the other mental faculties. This faculty embraces the forms of mental activity known as Abstraction, Classification, Generalization, Judgment, and Reasoning.

Suggestions on the Culture of the Understanding.—1. *The Understanding may be Cultured by the Pursuit of such Studies as require Reasoning.*—This, like the other mental faculties, is strengthened by use. All studies that give practice in reasoning will, therefore, prove useful in strengthening the understanding. Among the most important of these studies are Arithmetic, Grammar, Geometry, Physical Science, Logic, etc.

2. *The Understanding may be Cultured by Arranging our Knowledge in Logical Order.*—We reason correctly only as we proceed from thought to thought, each of which is logically dependent on the other. This logical order or dependence in thought may be that of means and end, cause and result, reason and consequent, part and whole, premise and conclusion, etc.

3. *Studies should be Arranged to give Culture in both Inductive and Deductive Reasoning.*—Rules in mathematics and laws in physical science should be reached inductively. The application of these laws and principles in experiments and solutions will afford practice in deductive reasoning.

4. *Forensic Discussion will give Culture to the Understanding.*—The proof of facts by probable arguments or by "circumstantial evidence" affords a wide field for probable reasoning, and is thus an excellent means of broadening the understanding. Too much cannot be said in favor of debates and discussions as a means of strengthening the reasoning powers.

5. *The Student should have Practice in both Demonstrative and Probable Reasoning.*—The first deals entirely with necessary truth, and is liable to make one arbitrary in his conclusions; the second deals with contingent truth, and serves to modify the positiveness of conclusions incident to demonstrative reasoning. Each is necessary to produce a well-balanced mind.

6. *That Culture of the Understanding is most Valuable which Leads the Mind to Search for Truth.*—We may confound an opponent by making untruthful statements in argument, but we give no culture to the understanding, and we certainly weaken our moral influence more and more with every such statement made. The judgment is convinced not with sophistry, but by argument stated in such a logical way that the conclusiveness of it cannot be questioned.

THE END.

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